THE Soybean Digest

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IN THIS ISSUE

EDITOR'S DESK

Growers Are Represented With plans for a long-time program for agriculture as their goal, the agricultural committees of both the House and the Senate held hearings through the farm sections during October. The attempt to obtain grass-root opinion and suggestion, the effort expended and vision evidenced by both committees, is to be greatly commended.

Officers and directors of the American Soybean Association, upon invitation from the Senate committee, represented the soybean industry at several of the hearings. Former president Walter McLaughlin appeared at the Peoria hearings, Howard Roach appeared at the Des Moines session, and John Evans represented the industry at Minneapolis.

The growth of the soybean industry during the past decade; the present importance; the need for inclusion of soybeans as a basic farm commodity in any computation of parity prices; and the need for revision of federal and state statutes now restricting the manufacture and sale of soybean products were all presented to the committee.

Much of America, and many of our representatives in Congress, have not yet recognized the tremendous strides made by the soybean crop in the past decade. The promotion of friendly relationships with members of Congress, and the creation of an awareness on their part of the current importance of soybeans in American agriculture, are major jobs for the American Soybean Association.

Quick Action Checked Decline For many months we have carried on the editorial pages of the *Soybean Digest* repeated articles pointing out the importance of farm and local elevator storage of soybeans. Any orderly system of marketing provides for release of a crop over a period of months, with a rather steady flow throughout that period. Any other system of marketing provides only for great fluctuation in prices within a given season.

An orderly system of marketing the soybean crop, as outlined previously, must hold a portion of the crop in reserve. The processor, the elevator operator and the grower would all benefit. The chaos of the system of from-the-field marketing built up during the war years can bring only price depression during the soybean harvest months.

As the 1947 crop began to move, soybean prices began to slide. The ratio between the prices of other farm commodities and soybean prices became out of proportion. The situation demanded attention. Acreage for 1948 was at stake. World price levels were above the domestic figures. There was demand for soybeans and soybean products from overseas buyers. Yet soybean oil, along with other edible oils, had been forced steadily downward and some buyers had withdrawn from the market. Immediate result was to force soybean prices even lower. Officers of the American Soybean Association called to the attention of the Secretary of Agriculture the injustices being done in a period of heavy marketing, at the same time suggesting possible remedies.

Price trends on soybeans reversed themselves immediately. They have been almost continuously upward since that date, as evidenced by the market graph carried in this issue. Between-commodity prices are not yet in adjustment, but millions of dollars of additional revenue have been returned to soybean growers as a result of the Association action.

A strong, virile organization of soybean growers is an absolute necessity during the coming decade. There is no other comparable crop, no other group or organization in a position to represent the crop which supplies 60 percent of the nation's protein feed and almost half its edible oil. In coming years there will be educational, legislative, promotional work which must be done by the growers' organization or it must remain undone. The soybean industry has now reached proportions demanding an organization of greater membership, sounder financing, and consequent wider and more powerful influence. Now—with soybeans still in a favorable position—the organizational job should be done. The millions of dollars returned to soybean growers this year are a mere trickle compared with the returns which are to be guarded through the years.

Fats Are Shrinking One year ago it was expected that the world supply of fats and oils would be considerably greater after the 1947 crops were in. It was thought that domestic production, together with the imports which would be forthcoming, would be adequate for our own needs and allow sizable exports.

Now we find ourselves with a fats and oils supply which borders on the verge of becoming alarming. Consumption of edible oils in the United States, on a per capita basis, has fallen to the lowest point since the mid-30's. Consumption of inedible oils has likewise fallen—chiefly because the supplies have not been available. Instead of plentiful supplies of fats and oils, we find our supplies shrinking. We have shipped some quantities to less fortunate nations—including soybean oil. We have done our best to help alleviate the hunger of Europe and Asia.

Now the 1947 soybean crop is considerably smaller than had been predicted. The cotton crop is also smaller than expected. Lard supplies have shrunk. Butter storage supplies are at a record low point.

What does it add up to? Scarce, high priced fats and oils, becoming more scarce before the situation becomes better. There seems to be no other answer.

To our many friends in the soybean industry the staff of the Soybean Digest extends the warmest of holiday greetings and sincere wishes for a happy and successful 1948.

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GROWERS

Wisconsin Varieties

The Lincoln variety has proved outstanding in southern Wisconsin.

Results of a 3-year variety trials at Madison, Eau Claire and Spooner were reported by James Torrie, George Briggs, A. M. Strommen and C. O. Rydberg in the annual report of the director of the Wisconsin experiment station.

Lincoln is excellent for hay, and with early planting and good cultural practices it can be grown for grain in the southern part of the state.

It is no later than the latest variety recommended for southern Wisconsin, which is Mukden (129 days), and is slightly earlier than Illini (131 days). Lincoln is, however, considerably later than such standard Wisconsin soy-grain varieties as Manchu 606 (109 days) and Mandarin 507 (104 days).

Lincoln produced highest yields of grain at Madison with a 3-year average of 35 bushels to the acre, and the grain also was highest in oil content. Mukden was second-best with 32 bushels. A number of other varieties yielded between 28 and 31 bushels. These results were obtained with early plantings made between May 15 and 20, thus giving late varieties a chance to make good.

Tests of early soybeans at Madison revealed that Manchu 3 was among the best. By comparison with Manchu 606, Manchu 3 yielded more grain by an insignificant margin, showed about the same high oil content, was 8 inches taller, carried the pods higher on the plants, and matured three days later (112 days).

Earlyana

Earlyana made a rather good record, but in most respects was not quite as good as Manchu 3. Habaro proved low in oil content. Two Mandarin strains were lower-yielding than other varieties at Madison.

Among comparatively early varieties tested at Eau Claire in 1944 and 1945, Manchu 606 was the best yielder. However, this is not an early variety by central Wisconsin standards; it will mature in the area only under favorable conditions. Among earlier varieties, Ottawa Mandarin yielded somewhat more grain than Mandarin 507 and also had a higher oil content, but had plants averaging 5 inches shorter.

At Spooner from 1944 through 1946, Flambeau showed higher yield and oil content than other extra-early varieties. It was out-yielded by Ottawa Mandarin, but this variety—early though it is—may not mature in years of early frost in Wisconsin's extreme north.

Three-year date-of-planting trials at Madison have shown that for maximum yields of soybeans, it is important to plant them reasonably early. May 20 proved one of the best dates, and can be considered the midpoint of the desirable planting season in southern Wisconsin. May 10 plantings were about as good as those made on May 20, whereas June plantings gave much poorer results. It is especially important to get soybeans in quite early if the late-maturing varieties are grown for grain.

Capital Soybean

The Capital variety of soybean was developed at the Central Experimental Farm, Ottawa, Ont., Canada by the Division of Forage Plants.

Capital is an early high-yielding variety of good type. Although its production is as yet relatively small in Canada it is giving an excellent account of itself and the demand for this variety is increasing and is greater than the present seed supply.

Capital originated from a cross made in 1935 between Strain 171 x A.K. (Harrow).

Strain 171 was an early maturing selection made from a mixed lot of seed received by the Division of Forage Plants, in 1931 from J. L. North, Royal Botanic Gardens, London, England. This seed had been collected in the vicinity of Sochentze, east of Harbin, Manchuria.

A.K. (Harrow) is a selection which was made at the Dominion Experimental Station, Harrow, Ont., from the A.K. variety, the original seed of which was obtained from the U.S.D.A. in 1925.

Following the original cross progeny selection was conducted on a single plant basis for 8 years. Capital was chosen from the most promising progenies and subjected to final test in 1941. It was licensed as a new variety in October 1944.

High Yielder

The variety is stable for all the important characteristics such as plant type, height, flower and pubescence color, maturity, type and color of seed. It matures at Ottawa in 120 to 125 days from the time of seeding.

Capital was included in the U. S. Group 0 tests in 1946, together with 16 other selected early varieties and strains, and ranked first in yield in five out of eight tests, with a mean yield of 25.9 bushels per acre. As an average for the eight tests it yielded 19.7 percent of oil which was the highest of all varieties or strains tested. U.S.D.A. ranked Capital as the most outstanding strain in Group 0 in 1946. —F. Dimmock, Division of Forage Plants, Central Experimental Farm, Ottawa, Ont.

—s b d—

Only 2,000 bushels of soybeans were produced in Turkey in 1947, compared to the 1935-39 average of 367,000 bushels, reports *Foreign Crops and Markets.*

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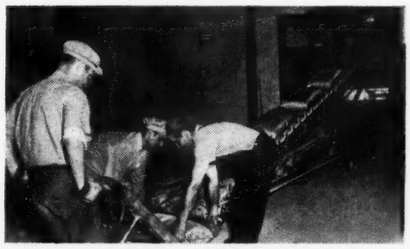

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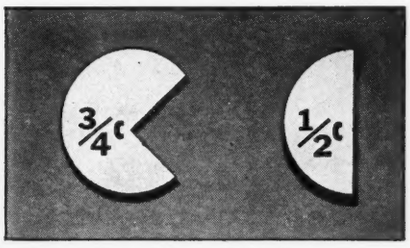

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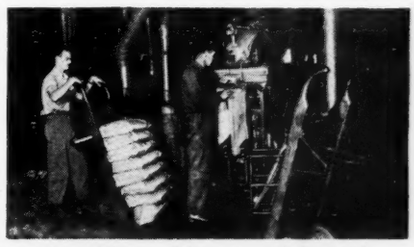

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These growers break all the rules but their land is more productive than it was 10 or 20 years ago.

Continuous Soys

By J. W. CALLAND
Central Soya Co., Inc.

IN ORDER that we reach an understanding as rapidly as possible, I shall begin this story by saying that probably no agronomist—myself included—would recommend planting the average Cornbelt farm with nothing but soybeans continuously year after year.

With this point planted firmly in your minds, I shall get on with my story, which concerns some localities where they *do* grow soybeans continuously, and where they like it, too.

At this point I can imagine that I hear some of you saying, "Well! Do they realize that they are ruining their land?" and my answer is yes, they are aware of this fact, but it does not make them unhappy. Of course, it may be a little early in the story for you to figure out just how they have "ruined" their land, but we shall come to that later on.

Ninety percent of the soybeans grown for market in Ohio are produced in the 40 counties in the northwestern part of the state. Near the center of these 40 soybean counties is an area of some 20,000 acres known as the Killdeer. It lies mainly in the southern part of Wyandotte County between Harpster and Marsailles, but it also protrudes somewhat into Marion County. Each year fully 80 percent of the tillable land in the Killdeer is busy growing soybeans—the balance is mostly in pasture, a few disappointing grain fields, and some worn-out timothy sod.

Mr. Greene, manager of the Harpster Grain Co., which annually handles some 200,000 bushels of Killdeer soybeans, told me that much of the Killdeer was once owned by David Harpster who died about 40 to 50 years ago. Harpster used most of it for pasture and sheep raising, and is reported to have made the little town of Harpster, Ohio, a wool shipping center during the 80's and 90's.

Crops Failed

After the turn of the century, however, it seems that sheep raising died out on the Killdeer. From 1900 to about 1915 some of the land owners tried to grow alsike clover seed, and they are said to have met with some success—but only on rare occasions. By the early 30's, all who had tried it were in agreement that it did not pay to try crop growing on the Killdeer; and, consequently, most of the land could have been purchased at prices ranging from $7 to $12 an acre. Luckily, by this time a few Killdeer farmers were trying soybeans.

Among these farmers were the Heilman Brothers, who, in 1934 bought for $12.50 an acre, 80 acres of the land adjoining their farm. This 80 acres had been in soybeans for the seventh straight year at that time, and 1947 marks the twentieth straight year in soybeans. Calvin Heilman says the average yield has been about 20 bushels per acre and that the soybean crop has paid for the land each year they have owned it. Then, here is another interesting point: this 80 is now worth at least seven times its original purchase price, and apparently it grows soybeans better than it did 20 years ago. Just for the record, the Heilman boys now own close to 1,300 acres of this Killdeer land.

During a meeting at Ohio State University, 2 or 3 years ago, when Calvin Heilman was relating their experiences with continuous soybeans, someone pointed out that they had probably ruined their land for ever growing anything else. Calvin's reply was that since it would not grow any other crops before it started producing soybeans, his only regret was that they had not bought even more Killdeer land and ruined it the same way. Their experience has been repeated all over the Killdeer area.

True, Killdeer land is, as they say in California, "very unusual," and probably was a lake bed a long time ago; anyway, it is tough, hard to work, doesn't drain, and you have to learn how to farm it even in continuous soybeans.

The average Killdeer farmer only plows his fields once every 5 or 6 years. Other years he simply waits until it is dry enough for working, then cuts it well with a disc harrow, and drills in soybeans with a grain drill. He then stays off the field until it is ready for the combine.

Fertilizer tests, made on some of the Killdeer fields, indicate that an application of 100 pounds of 0-12-12 fertilizer will increase yields by 4 to 5 bushels per acre. Probably 25 percent of the growers are now using some fertilizer, and a few are planting their soybeans in rows in order to use more fertilizer without placing it directly with the seed.

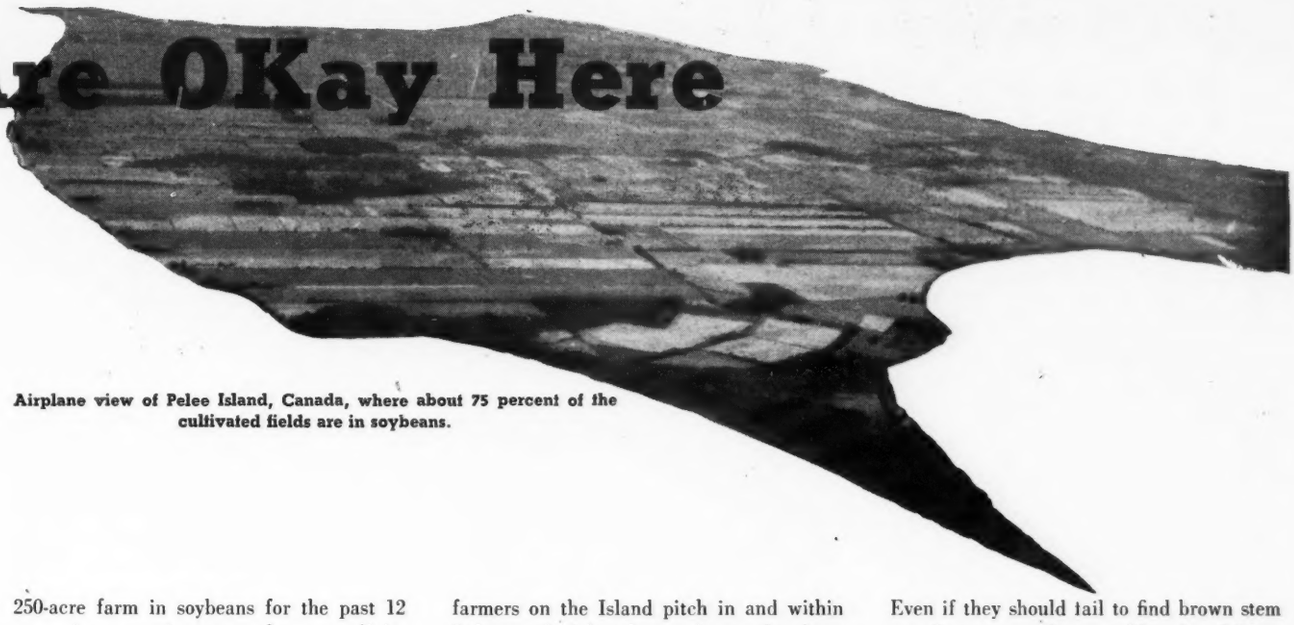
This is the twentieth straight crop of soybeans on this field. This year wet weather delayed planting until July 1. The soybean plants were from 6-8 inches high on July 29, when this picture was taken.

Reduces Weeds

Since the customary practice of Killdeer farmers is to plant their soybeans solid and then make little or no attempt to cultivate the crop after it is planted, I made particular inquiry about the weed problem. Some of the most successful growers said that the practice of growing continuous soybeans had reduced their weed problem. By preparing the seedbed rather late in the season, they kill the first crop of weeds, and the rapid growth of the soybeans shades the ground in time to prevent much further weed growth. Another explanation that these farmers offer is that since the ground gets so hard that a rotary hoe or spike-tooth harrow has little effect upon it, a poor, weak, little weed doesn't stand much chance for growth.

One Killdeer farmer, who has had his

Are OKay Here



Airplane view of Pelee Island, Canada, where about 75 percent of the cultivated fields are in soybeans.

250-acre farm in soybeans for the past 12 years, is now trying to purchase an adjoining 200 acres without buildings for $80 an acre. This man told me, quite candidly, about the first time he plowed a furrow across one of his 40-rod fields a number of years ago. It seems that as he lifted the plow at the end of the field, he heard a noise behind him, and turning, he saw that the end of the freshly-plowed furrow was rolling back into its bed again. He insisted that the furrow was so tough that it pulled itself back in again clear across the field, and he had to quit plowing because he couldn't find the place where he had turned out that first furrow. I found myself willing to admit that Killdeer soil was very unusual, and it is possible that this is why I didn't try to tell him he would ruin it by growing continuous soybeans.

* * *

Another interesting place where 75 percent of the tillable land has been in soybeans for the past several years is Pelee Island, Canada. This Lake Erie island consists of approximately 7,000 acres and lies about 20 miles north of Sandusky, Ohio.

I visited this island, in company with some Indiana and Ohio farm managers in 1946, at which time our host was Henry Rahm, a prominent landowner and farmer, who is called the "Soybean King" by the Islanders. Rahm told us that more than 5,000 of the Island's 7,000 acres were growing soybeans, and that they expected an average yield of 30 bushels per acre. I have since learned that the 1946 yield was reduced to 27 bushels per acre by a rougher than usual breeze which blew a part of the lake right across the Island.

Ship by Steamer

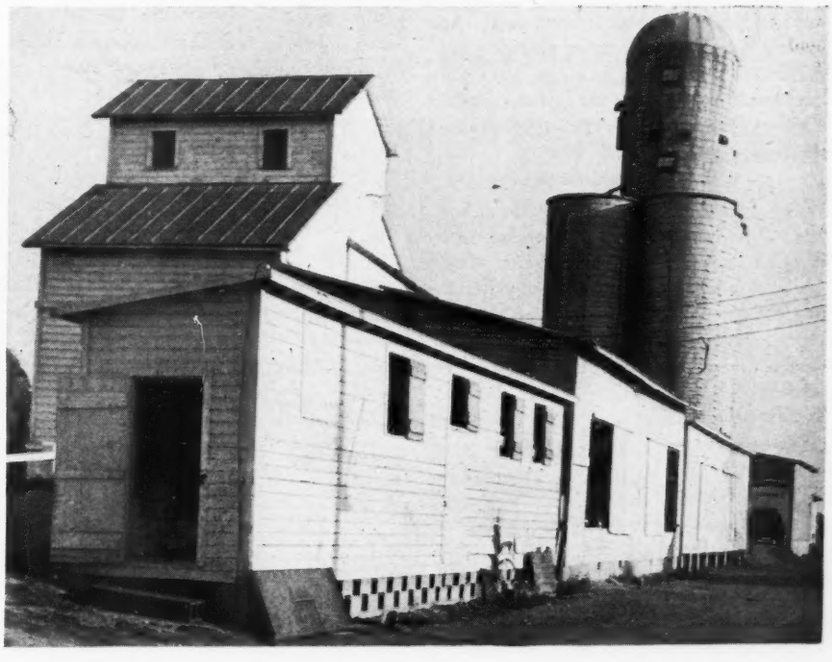
Rahm explained how the Pelee soybeans are delivered to market. It seems that the Canadian Steamship Co. ties up one of its grain freighters to a little pier on the north side of the Island for 48 hours each fall when the crop is ready to move. All of the farmers on the Island pitch in and within 2 days and nights the year's crop has been delivered to that dock. Any soybeans that miss this freighter must wait another year for the next one.

Back before Hitler invaded Poland, these Canadians grew a lot of tobacco on Pelee Island, but the war stopped all of that. It may be that considerable tobacco will again be produced there, but they seemed highly pleased with soybeans when we visited them. They plant soybeans in rows and do a good job of cultivating. While it may seem a little far north for the Lincoln, they report good success with this variety.

It has occurred to me that these two places where continuous soybeans are grown should be interesting spots for soybean disease men to spend a couple of weekends. Even if they should fail to find brown stem rot, I am sure they would enjoy fishing, bathing, boating, and the delightful hospitality of the folks on Pelee Island. Incidentally, these Canadian soybean farmers also raise ringneck pheasants and claim the best pheasant shooting east of South Dakota, and it is but a short ride to the famous wine cellars on the nearby United States Islands.

So here we have two localities where continuous planting of soybeans has been practiced from 10 to 20 straight years, apparently without loss of yield and without the incurring of disease; however, I hark back to my original statement and conclude by saying again that no agronomist in his right mind would recommend continuous soybeans as good farming practice on Cornbelt farms. These are only some interesting exceptions.

The Harpster Grain Company's elevator at Harpster, Ohio handles about 200,000 bushels of Killdeer soybeans annually.



SOYBEAN STALKS FOR PAPER

By S. I. ARONOVSKY[1]

Northern Regional Research Laboratory[2]
Peoria, Illinois

THE INCREASINGLY large acreage devoted to soybeans, particularly in the Midwestern wheat - producing areas, has focused some attention on the possibility of using soybean stalks for pulp and paper making. The soybean acreage increased from less than 500,000 acres in 1917 to about 10 million in 1939 and 11.5 million in 1946. Of the 1946 acreage 9.6 million acres, or 83.5 percent, were devoted to bean production, and 1,550,000 acres to hay, while the crop on the remaining 350,000 acres, or 3 percent, was probably grazed or plowed under. Five of the Midwestern states, Ohio, Indiana, Illinois, Iowa, and Missouri, accounted for about 72 percent of the total soybean acreage in 1946. Illinois alone had 3,426,000 acres in soybeans, or nearly 30 percent of the entire soybean production in the United States.

The present shortage of edible oils, which began during the recent war, is partly responsible for the increased soybean production, and it also shifted the emphasis toward the production of beans and away from harvesting the whole plant for hay. Of the 10 million acres planted to soybeans in 1939, about 4.2 million were harvested for beans and 4.4 million for hay, as compared with the acreage in 1946 of 9.6 million acres for beans and 1.55 million for hay.

Yield of Stalks

The yields of stalks from the areas harvested for beans have been reported as varying from ¼ to 1 ton per acre, depending upon variety, soil, and cultural conditions. Assuming ½ ton per acre as an average yield, the area harvested for beans in 1946 produced 4.8 million tons of soybean stalks. This is a sizable tonnage, although far below the approximately 40 million tons of wheat straw recoverable for industrial use in 1945.

The proximate chemical analysis of soybean stalks is given in Table 1 where it is compared with the analysis of wheat straw. These data indicate that these two materials are fairly similar chemically. Their physical characteristics, however, are quite dissimilar. The soybean stalk consists of a very thin outside layer of bast-like fiber, a relatively thick layer of woody tissue, and a pithy core. Wheat straw has a hollow stem whose walls are composed essentially of leaf sheaths. The maximum, minimum, and average lengths of the cellulose fiber from soybean stalk are reported as 1.5, 0.3, and 0.6 millimeters, respectively as compared with 3.12, 0.68, and 1.48 millimeters for wheat straw fiber The diameter of the soybean stalk fiber is roughly similar to that of the wheat straw fiber. The ratio of fiber length to diameter is thus considerably greater for wheat straw, a factor which favors better sheet formation and increased paper strength produced from wheat straw pulp.

The advent of the combine for wheat harvesting in the Midwest and the lack of suitable pick-up baling equipment, together with increasing soybean acreage at the expense of some wheat acreage, have resulted in a shortage of baled straw for both farm and industrial use. This situation became more acute during the war and preliminary experiments were conducted at the Northern Regional Research Laboratory and trial runs were made at several strawboard mills to test the suitability of soybean stalks for (9-point — 0.009 inch thick) corrugated paper. Summarized results of some of the Laboratory tests are given in Table 2.

It is evident from these data that the strength values for soybean stalk pulp are inferior to those of wheat straw pulp. This result is largely owing to the relatively low length-to-diameter ratio of the soybean stalk fiber as well as to its extreme shortness. The freeness (rate of drainage of water through a mat of fiber of definite weight) of the soybean stalk pulps at the point where their maximum bursting strength is obtained is too low for practical operation of a commercial strawboard machine. The higher densities of the soybean pulp handsheets, because of closer packing obtained with the shorter fibers, is also a disadvantage—corrugating paper is sold by the ton, but the corrugated product is merchandised on an area basis. Thus, the converter will obtain less 9-point corrugated paper from a ton of soybean stalk pulp than from a ton of wheat straw pulp.

Paper Yield

Soybean stalks require a greater amount of chemicals for pulping and result in somewhat lower pulp yields than is the case with wheat straw. These results (Table 2) indicate that under the conditions of the laboratory experiments, soybean stalks would not make a satisfactory, complete substitute for wheat straw in the production of a strong corrugating paper. It is apparent, however, that the use of a small portion of soybean stalk pulp mixed with the wheat straw pulp would not affect the strength values of the final paper too adversely.

In the commercial runs on the production of corrugating paper, the soybean stalks were not used alone but in mixture with cereal straws, mainly wheat straw. Up to 20 percent soybean stalk pulp was used in the mixtures. No accurate data on pulp yields and properties or on chemical consumption of the soybean stalks are available for these runs, since the stalks and cereal straws were usually pulped together in the same digesters. The results reported by these mills may be summarized as follows:

Results Obtained

1. Satisfactory corrugating paper can be made with a pulp mixture containing up to 20 percent soybean stalk pulp, providing the latter is well cooked.

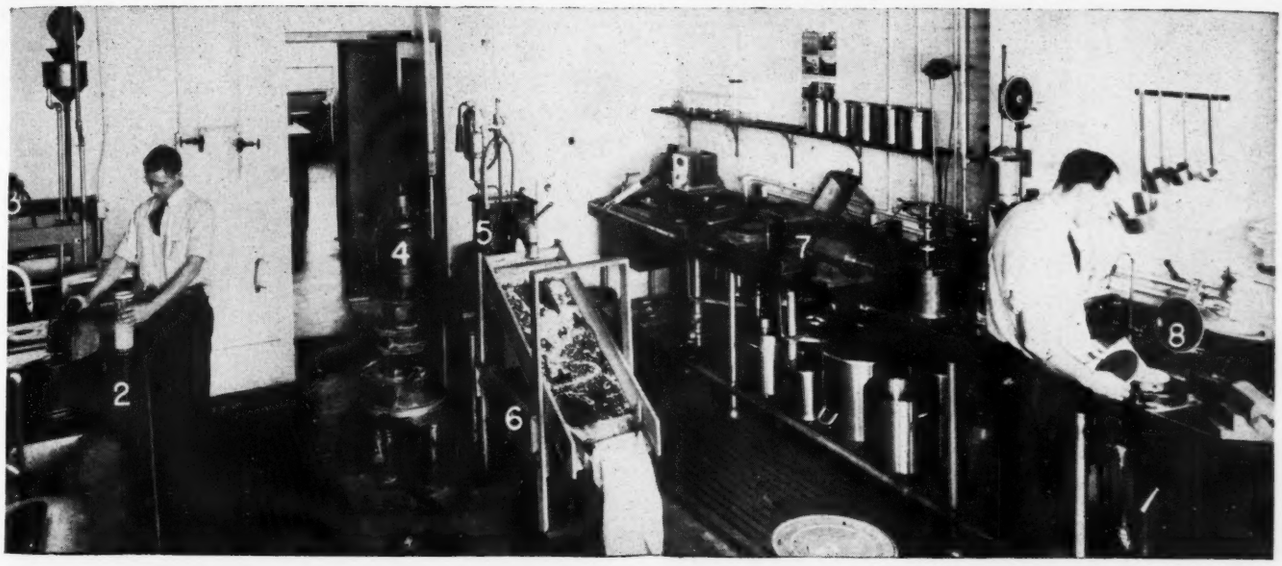
2. Considerably more chemical is required for soybean stalks than for similar amounts of straw.

3. The weathering characteristics of soybean stalks are about the same as those of wheat straw, providing the stalks are fairly dry when baled; wet soybean stalks, however, deteriorate fairly rapidly.

4. The soybean stalks should be relatively free from beans, as the latter cause foaming difficulties and produce "grease" spots in the finished paper.

[1]In Charge, Pulp and Paper Section, Agricultural Residues Division.

[2]One of the laboratories of the Bureau of Agricultural and Industrial Chemistry, Agricultural Research Administration, U. S. Department of Agriculture.



Above: You see the cellulose pulp evaluation laboratory at the Northern Regional Research Laboratory. Standard Tappi beaters at left. Morden laboratory beater and pulp flat and hillside screens in center. Making standard test sheets at right.

5. Soybean stalk pulp requires more power for refining (preparation for the paper machine) and somewhat different refining and screening equipment for optimum results.

6. The soybean stalk pulp should be prepared separately, then blended with the other pulps.

A total of approximately 50,000 tons of soybean stalks was used in the production of corrugating paper during the war years when wheat straw was scarce and strawboard production and prices were high. As straw became more readily available and its cost at the mill decreased, the demand for soybean stalks for paper production practically disappeared. At present only a few mills are purchasing soybean stalks, and then only in relatively small amounts.

It is evident from the foregoing that, with the available knowledge of the paper-making characteristics of soybean stalks, this material is not considered a satisfactory substitute for wheat straw in producing corrugating paper under the present conditions of manufacturing. The laboratory and mill-scale trials described here indicate that more information on the paper-making characteristics of soybean stalks is required before the proper place of this material in the field of pulp and paper can be established.

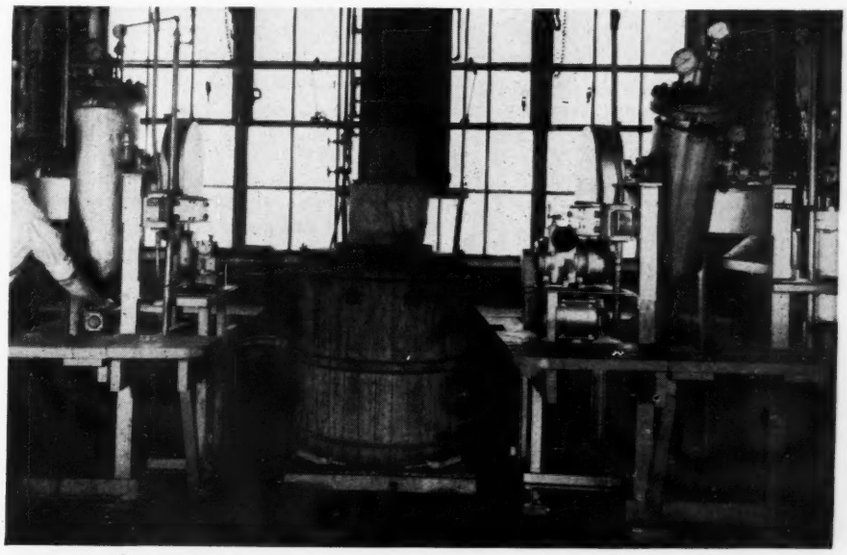
TABLE 1.—Proximate Analysis of Soybean Stalks and Wheat Straw
(All values except moisture are on basis of moisture-free material.)

Constituent	Material	
	Soybean stalks	Wheat straw
	Percent	Percent
Moisture	8.3	6.6
Ash	2.3	6.6
Extractives		
Alcohol-benzene	3.9	3.7
Cold water	7.3	5.8
Hot water	8.8	7.4
1 percent NaOH	32.0	41.0
Nitrogen	0.66	0.38
Lignin	19.8	16.7
Pentosans	24.8	28.2
Cross and Bevan cellulose		
Crude	50.1	54.4
Ash-free	48.2	53.6
Pentosans in Cross and Bevan cellulose	22.1	26.8
Alpha-cellulose		
In Cross and Bevan cellulose	68.7	73.3
Basis oven-dried straw	34.5	39.9

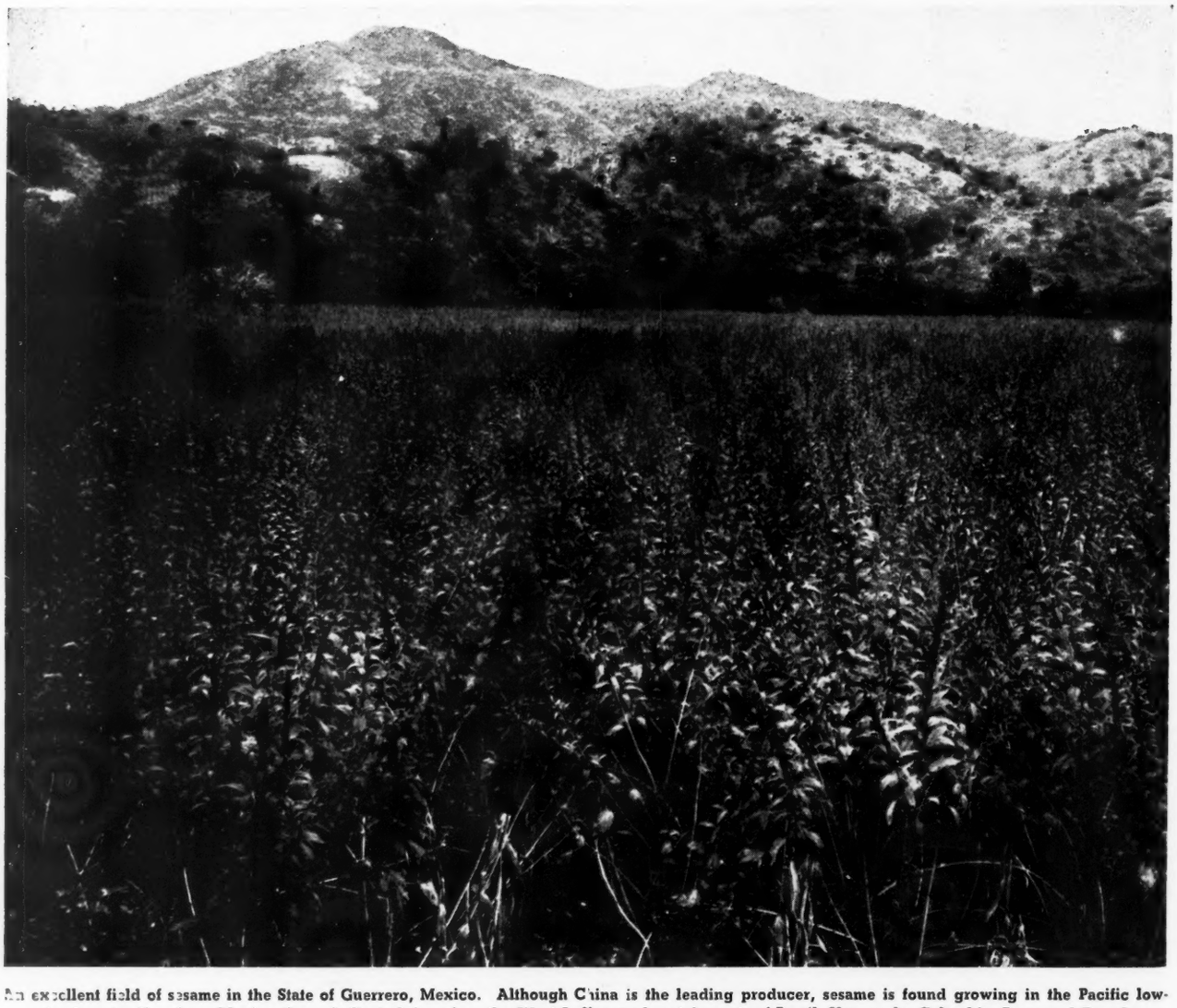
Table 2.—Soybean Stalk Pulp—Pulping, Yields, and Strength Data

	Soybean stalks				Wheat[1]
	I	II	III	IV	Straw
Cooking chemicals[2]					
CaO—percent	8.0	6.0	6.0	6.0	6.0
NaOH—percent	..	6.0	..	4.0	1.5
Na_2CO_3—percent	9.0	..	6.0	..	..
Temperature of cooking—°C.	140	140	140	140	140
Time of cooking—hours	5	5	5	5	5
Yields of pulp[2]					
Crude—percent	90.2	79.5	84.0	80.1	90.3-91.4
Washed—percent	72.1	64.8	73.7	68.7	74.5-76.5
Fines[3]—percent	18.1	14.7	10.3	11.4	14.4-16.9
Strength data (at maximum bursting strength)					
Time of beating—minutes	75	75	30	75	30-60
Freeness (S.R.)—ml.	180	180	245	180	590-255
Bursting strength—pts./100 lbs.	20	21	17	23	43-49
Tear resistanee—grams	14	15	20	16	17-24
Tensile strength—kilograms	2.8	3.1	2.3	3.3	4.1- 5.1
Density—grams/ml.	0.61	0.50	0.46	0.62	0.36- 0.42

[1]Data from six cooks. [2]All percentages based on moisture-free original raw material. [3]Includes cooking chemicals removed from the pulp during washing.



Right: This is a view of some of the laboratory autoclaves for producing cellulose pulps from agricultural residues in digester room. Wooden blow pit with perforated false bottom, and spray tower in center. Left, autoclave connected for blowing autoclave relief connected to condenser.



An excellent field of sesame in the State of Guerrero, Mexico. Although China is the leading producer, sesame is found growing in the Pacific lowlands extending from Mexico through Central America, the West Indies, and certain parts of Brazil, Venezuela, Colombia, Peru, and Ecuador.

SESAME

By DALE E. FARRINGER

SESAME has become an important oil crop in the Western Hemisphere only within the past decade. In 1945, approximately 100,000 short tons of sesame were grown in Latin America, a 10-fold increase over the 1935-39 average. World production during 1945 was estimated at nearly a million and a half tons. China was by far the leading grower, producing around half the world total, with India supplying about one-third, and Latin America and Africa the remainder.

This seed crop has been grown in Asia since ancient times. Evidence indicates that both black and white seeds have been cultivated in India for many centuries, perhaps prior to the Aryan invasion. Botanical evidence points to Africa as the place of origin of this plant, where some eight or nine wild forms were said to have been found. One early writer argues that sesame is indigenous to the Netherlands East Indies. From either or both of these sources the plant was brought to India and China.

The origin of the word sesame is obscure. Latin authors frequently used the word *sesamum*, and Greek writers, *sesame*. Some of the names used by the Indians for the seed, such as *gingeli* and *jinjili*, probably came from Arabic or Persian and *til* from Sanskrit. The Indians still use some of these names today.

Sam-sam and *sim-sim* are Arabic names for the plant as well as for the magic word "Sesame" used by Ali Baba in opening the legendary cave of the 40 thieves in *The Arabian Nights*. So far as is known, the use of the phrase may have been suggested by the small impervious capsule, bearing a treasure of oilseeds which are freed by the bursting of the capsule when the plant matures.

Uses of Sesame

Although sesame is a relatively minor crop, the seeds and oil have a variety of uses. In many parts of the world the seed is well known as an adornment on bread and rolls. To a lesser extent it is used in candy and in a refreshing drink called *horchata*. The oil, usually pale yellow when refined, is used as a salad and cooking oil and as a component in the manufacture of margarine, shortenings, and soap. Sometimes it is mixed with olive oil as an adulterant. Small quan-

"KNOW YOUR OILSEEDS"

• One in a series of articles about oilseed crops which compete with soybeans. The word sesame is of legendary fame. But the seed yields a useful vegetable oil in many parts of the world. The author is assistant agricultural attache of the American embassy in Brazil. Reprinted from AGRICULTURE IN THE AMERICAS.

Oblong seed pods or capsules of sesame are about 1½ inches long and the width of a pencil. Harvesting is sometimes difficult because the seed capsules and seed stems do not all mature at the same time.

Sesame stalks are usually cut by hand with a machete.

tities of sesame oil find outlets in the pharmaceutical and perfume industries. In some countries the oil is still used as an illuminant.

The leaves, when submerged in water, form a mucilage-like substance used in treatment of diarrhea and dysentery. The pressed cake makes an excellent livestock feed, containing from 10 to 20 percent oil, depending upon the method of extraction and conditions of growth.

The Plant

Sesame is a member of the Pedaliaceae family, which consists of 16 genera and some 60 species. *Sesamum indicum* is the most important species cultivated in tropical and subtropical regions. It grows best on well-drained, sandy-loam soil, sheltered from strong winds and torrential rains. Frequently, however, the plant must endure hardships in many countries as it is grown on hillsides or around huts where conditions may not be suitable. The yield, of course, depends on soil, moisture, weather, and care.

The plant is an erect annual, which usually grows 2 to 5 feet high, depending on the variety and growing conditions. Flowering starts when the plants are 2 or 3 months old and extends over a considerable period. The flowers are tubular, two-lipped, and are about three-fourths of an inch long. The color varies from pink to yellow. They produce an oblong seed pod or capsule which is about 1½ inches long and the width of a pencil. While pods are forming on the lower portions of stalk, flowers are still blooming at the top.

The two-valve pod, or capsule, contains from 80 to 84 seeds, which are arranged in four rows. The seeds vary in size, weight, and color depending upon the variety and growth. They are generally white or pale yellow in color, although dark red, brown, and black seeds are sometimes produced. The size of unimproved varieties is about that of a flaxseed, and generally they are pear shaped. Oil content varies from 45 to 55 percent. White seeds are reported to yield a superior quality of oil, but less quantity, than the dark-colored varieties.

Primitive planting methods are commonly employed, since sesame is grown in regions of abundant labor where little farm machinery is used. Frequently, seeds are dropped in plow furrows and covered by the laborer's foot. In some localities the farmers do not bother to plow. They merely punch a hole in the ground at intervals, and drop in a few seeds. A hand-planting device, consisting of a bottle with a perforated stopper in which a mixture of seeds with sand or sawdust is placed, has been suggested but is believed to be little used.

Six to ten days after planting, the seeds germinate. When the plants are about 1½ inches high and have four leaves, thinning out and weeding are begun. These operations are usually done by hand. The spacing varies but on an average the distance between plants is about a foot, and between rows about 2½ feet. The wider the spacing, the more the plants tend to branch instead of growing into a single stalk. If plants are allowed to branch, the harvesting is more difficult, although the yield of seed is about the same.

Difficulties in Harvesting

Harvesting sesame, which begins 110 to 140 days after planting, presents special difficulties. Generally, the plants are cut when the leaves turn yellow, shortly before the majority of the capsules ripen and start to open. The first capsules to mature are the lower ones. Often they open and discharge their seeds while the others are still green. Timing the cutting in order to obtain the maximum yield is an extremely important factor. If the cutting is too late or is not done rapidly enough, a large part of the crop may be lost. Planting should also be timed so that it will be ready for harvest when the dry season begins. Great losses are suffered if rain falls during the cutting or drying periods.

Until recently no successful machinery had been devised for cutting or threshing; both were hand-labor jobs. A recent report from Venezuela, however, announces a demonstration made by the Ministry of Agriculture that sesame can be efficiently harvested with a wheat binder equipped with a heavy cutting bar. The use of this method may greatly increase the acreage planted to this valuable seed. If the cutting is done with a hand knife or sickle, care must be taken not to shatter the seeds from the matured capsules.

After cutting, the stalks are tied and usually arranged in shocks varying from 12 to 16 bundles. In this manner they are left to dry in the sun for several days, permitting the green capsules to ripen and to open.

For threshing, the bundles are shaken or laid out on a cloth and beaten with a stick or trampled out. The foreign matter usually is separated by hand or winnowed by throwing the material into the air. In some localities, cleaning machines which are used for small grains are suitable for sesame. Since not all seeds are freed by the first threshing, in many cases the stalks are redried and threshed again. According to some authorities, hand harvest and threshing represent from 37 to 60 percent of the production cost, making

sesame a profitable crop only in regions where an abundance of hand labor exists.

Grows in the Americas

The Pacific lowlands extending from Mexico through Central America, the West Indies, and certain parts of Brazil, Venezuela, Colombia, Peru, and Ecuador seem particularly well suited to the growth of sesame. Regions of tropical scrub forest with scattered savanna openings, where the rainfall is seasonal and not excessive, offer the best prospects for its cultivation in the Western Hemisphere. During the growing season as little as 20 inches of well-distributed rainfall is considered sufficient to produce a good crop.

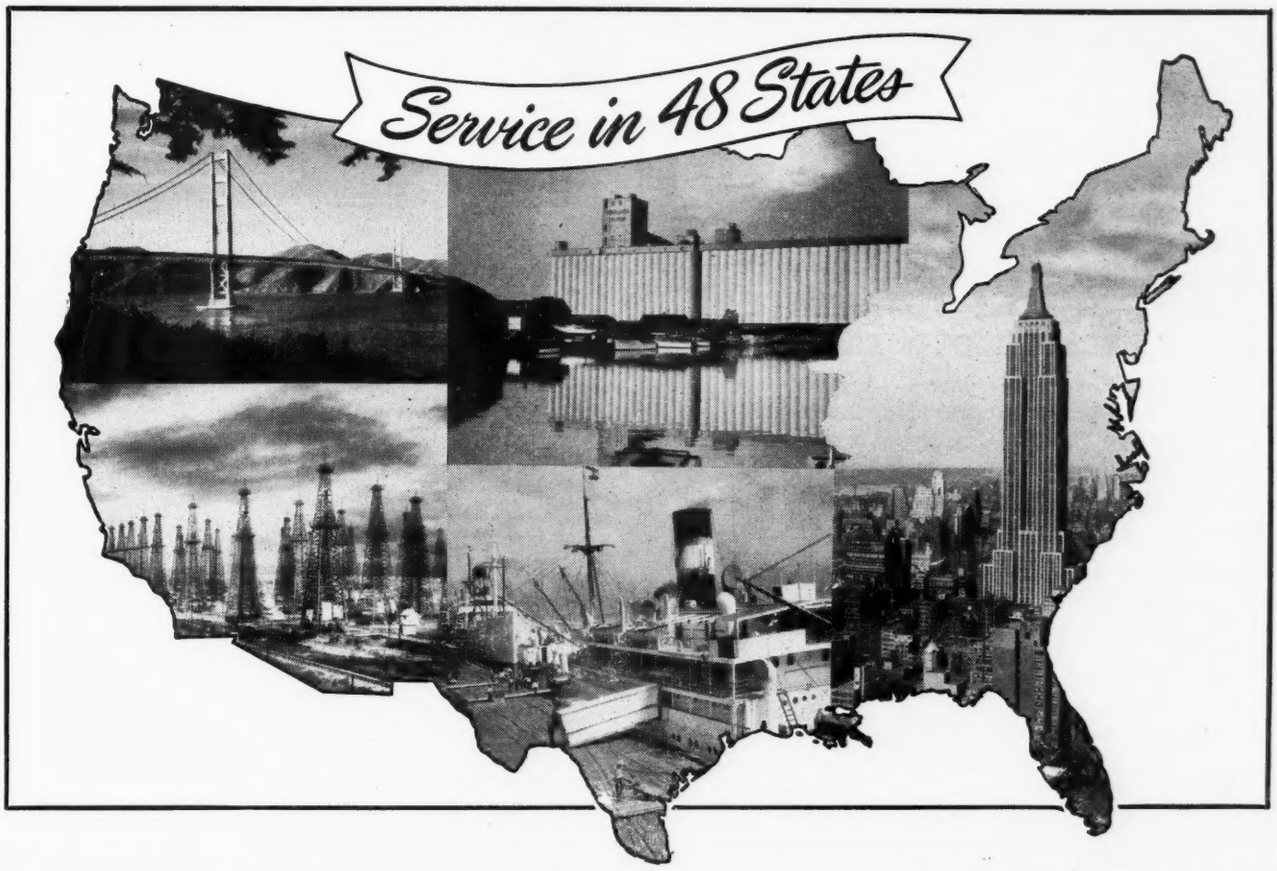
MEXICO:—In Mexico, sesame is generally grown at fairly low elevations where the temperature is 70° or above. A large part of it is concentrated in the valley of the Rio Balsas, which forms the boundary between the States of Guerrero and Michoacan. Other important growing areas are in the States of Sinaloa and Sonora.

The two common varieties in Mexico are known as the *riguena* or *morena,* the most widely cultivated, and the *criollo* or white. The *criollo* is the larger plant, but it takes longer to mature and requires a more fertile soil. The yields of both varieties vary from 200 to more than 1,000 pounds to an acre, depending on growing conditions.

There are two growing periods a year in Mexico, one during the dry season under irrigation and the other after the rains begin. The irrigated crop is planted from December to February and harvested from April to June. The rainy-season crop is planted during the summer months and harvested from October to December. Sesame is usually sown as a separate crop, although it is sometimes planted between rows of corn and occasionally is intercropped with castor beans or coconuts.

Sesame is the largest single source of vegetable oil in Mexico. Increased cultivation came about during the war, when the Asiatic sources of vegetable fats and oils were cut off. In 1945, close to 90,000 short tons were produced in contrast to 28,200 tons in 1938. Practically the entire production of this oil seed is consumed domestically. It is normally used in Mexico for edible purposes, but in recent years larger amounts have gone into the soap industry.

NICARAGUA:—In Nicaragua, as in Mexico, sesame has become the most important source of vegetable oil. Small experimental plantings existed before the war, and Nicaraguan production reached 4,500 tons during the 1942-43 season. Most of the output was exported, Nicaragua becoming a leading exporter of sesame to the United States. Sesame ex-



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ports represented about 7 percent of the value of all Nicaraguan agricultural products shipped in 1943, surpassed only by coffee, rubber, and timber.

The republic's entire acreage of sesame is located in the western lowlands, principally in the departments of Leon and Managua. Only one crop is planted each year, as irrigation facilities are limited. Sesame is sown from July to the middle of September and harvested after the rainy season ends in late November or December. Average yields are around 500 pounds to an acre, although yields as low as 300 pounds were reported in 1943 because of the lack of rainfall.

SOUTH AMERICA:—In Colombia, sesame is grown in the State of Tolima and to a lesser extent in Valle del Cauca. Production has been on the increase during the war years, reaching a peak of 6,800 tons in 1943. Often two crops are produced a year where the farm lands are irrigated, as in Mexico. Yields from 350 to 450 pounds an acre are common. Most of the Colombian production is consumed domestically.

Although output in Venezuela has been on the increase, reaching 3,300 tons in 1944, progress made in the selection and crossing of varieties, under the direction of an agriculturist from the United States, is even more significant. The principal growing areas are in the states of Aragua, Carabobo, and Paraguana. Sowing begins in late summer and extends into the fall, exact times depending upon the rains.

In Brazil, production is still rather insignificant. Most of the sesame cultivation is centered in northern Brazil in the State of Maranhao, but plants are scattered from Amazonas to Rio Grande do Sul.

Sesame is produced also in Peru and Ecuador, though in smaller amounts.

OTHER COUNTRIES:—Other republics in Latin America grow small quantities of sesame. They are El Salvador, Guatemala, Costa Rica, and the Dominican Republic.

UNITED STATES:—In the United States, only experimental plantings have been made in the South and in the states of California and Arizona. Lack of interest in the crop in this country is the result of highly fluctuating yields, the undesirable shattering characteristic of the seed capsules, and the need for large quantities of hand labor, especially at harvest time.

Production Outlook

The production outlook for sesame in Latin America is not expected to show any marked change during the immediate postwar years. The extent to which competitive fats and oils will replace sesame will depend largely on the internal demand and prices. In several Latin Ameri-

can countries sesame should provide a source of good-quality vegetable oil. In Mexico hydrogenated sesame oil is reported to be popular with the baking trade as a lard substitute. In Nicaragua, because of the lack of extraction equipment, high production levels will depend on export markets, particularly the United States. During 1935-39 the average annual importation of sesame seed into the United States was around 27,000 short tons, primarily from China and India. It was only when the war interrupted the former sources that the United States began to import sesame from Latin America.

—sbd—

BOOKS

OFFICIAL METHODS OF ANALYSIS, First Revisions. $6.00 including binder. Revisions separately 50c. American Oil Chemists' Society, 35 E. Wacker Drive, Chicago 1, Ill.

In accordance with its policy to keep the 1946 edition of the *Official Methods of Analysis* as up-to-date as possible, the American Oil Chemists' Society announces the first *Revisions*, to be entitled *1947 Revisions* and to be available in looseleaf form, 6 x 9, like the *Methods* themselves. Technical editor of both *Methods* and *Revisions* is V. C. Mehlenbacher of Swift and Co., Chicago, Ill.

Included in the *1947 Revisions* are the following sections:

Index revision; cellulose yield correction, Bb 3-46; refining loss revision, Ca 9b-46; table correction, I 2-46; refining loss revision, Ca 9c-46; ash addition, Ca 11-45; refined and bleached color addition, Cc 8d-47; insoluble impurities revision, Ca 3-46; glycerol, Ea 6-46; specific gravity, Ea 7-46; moisture, glycerol, Ea 8-46; moisture, lecithin, Ja 2-46; benzene insoluble matter, Ja 3-46; acetone soluble and insoluble matter, Ja 4-46.

These *Revisions* are embodied in the revision of Trading Rule 102 announced by the National Soybean Processors Association, effective on all sales contracted for shipment after September 30.

TYPOGRAPHY, LAYOUT AND ADVERTISING PRODUCTION. By Edwin H. Stuart and Grace Stuart Gardner. 48 pages. $1.00. Edwin H. Stuart, Inc., 422 First Ave., Pittsburgh, Pa.

A handy and readable little book that will be of use to those in the advertising profession or to the many other people nowadays who have occasion to prepare copy for the printer.

The book will answer the usual questions that come up on the subject.

—sbd—

URGES FOOD EXPORTS

Harry A. Bullis, president of General Mills, Inc., speaking on a recent national radio program, urged Americans to support a program of heavy food exports to Europe, despite drouth damage to the corn crop.

Recently returned from a tour of Europe, Mr. Bullis was heard on the broadcast along with Clinton P. Anderson, secretary of agriculture.

Although corn, soybean and cotton harvests have been hurt by drouth, the nation's wheat crop is the largest in history, he pointed out.

Drouth has taken a heavy toll of food crops of western Europe, he reported. "The people there need food, especially wheat foods and fats and oils."

"A hungry Europe is a dangerous Europe," Mr. Bullis concluded, "but a well fed Europe will pull itself back to normal living."

—sbd—

SESAME IN NEBRASKA

Sesame is the most dry-weather-resistant crop at the Nebraska Experiment Station, reports Harry Miller, acting research executive of the Nebraska chemurgy project at Lincoln.

Sesame did not even begin to suffer during the dry weather of the 1947 summer.

"I asked Dr. Staker to make an estimate as to how much longer sesame could have withstood the drouth before visible damage might have occurred," said Miller, according to *Nebraska Farmer*. "He estimated two or possibly three weeks. It appears that sesame merits a definite place in regions subject to severe drouth."

S. M. ARCHER OF A-D-M HAS PASSED

Shreve MacLaren Archer, 59, president and chairman of the board, Archer-Daniels-Midland Co., Minneapolis, died November 10 in Miller Hospital, St. Paul.

Mr. Archer accidentally swallowed a chicken bone October 21 and entered the hospital the following night. The bone had entered the esophagus and could not be removed. Infection developed, spreading throughout his body.

He was buried from the Archer residence at 990 Summit Ave., St. Paul November 12. Burial was in St. Paul.

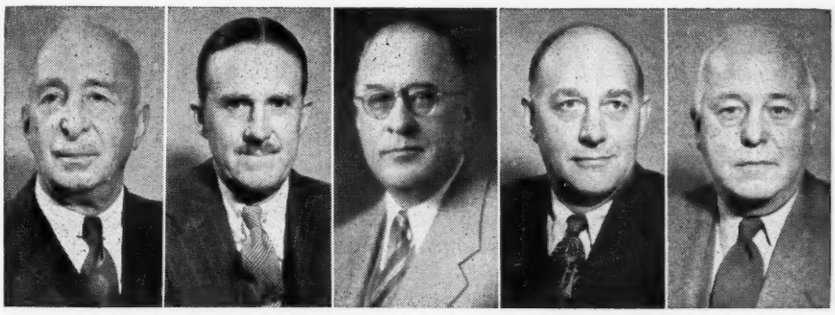
Mr. Archer was born September 29, 1888, at Yankton, S. D. He attended St. Paul Academy, Hill School at Pottstown, Pa., and Sheffield Scientific School of Yale University.

In 1923 he was named a vice president of Archer-Daniels-Midland Co. He was elected president of the company in 1924, and was active as chairman of the firm's board of directors and as a member of the executive committee.

Under his direction Archer-Daniels-Midland Co. became one of the world's largest processors of vegetable oils and one of the nation's largest grain and flour milling firms. The company is among the largest soybean processors and manufacturers of soy flour in this country. The company has been among the leaders in the industry since soybeans were first grown commercially in this country. It has worked toward a larger soybean acreage and also contributed to the expansion of the soybean processing industry, which now has a capacity of almost 200 million bushels a year.

Mr. Archer was a director of the St. Paul Fire & Marine Insurance Co., First National

S. M. ARCHER



These men were included in executive changes of Archer-Daniels-Midland Co. in November. Left to right, Samuel Mairs, new chairman of the board; T. L. Daniels, president; W. L. Dedon, executive vice president and treasurer; Erwin A. Olson, vice president in charge of flax fibre division, elected to the board of directors; and Samuel O. Sorenson, vice president in charge of research.

Bank of St. Paul, First Bank Stock Corp., Northwest Bancorporation and an executive committee member and director of the Great Northern Railroad.

He was formerly president of the Minneapolis Chamber of Commerce, now the Minneapolis Grain Exchange, and a trustee of Minnesota & Ontario Paper Co. At one time he was chairman of the board of Northwest Airlines, Inc.

Samuel Mairs, executive vice president of Archer-Daniels-Midland Co., has been named chairman of the board.

T. L. Daniels, executive vice president, was elected president.

Both positions previously were held by Shreve M. Archer.

W. L. Dedon, vice president and treasurer, was elected executive vice president and will also continue as treasurer.

Erwin A. Olson, vice president in charge of the flax fibre division, was elected to the board of directors.

Samuel O. Sorenson, technical director, was named vice president in charge of research.

Mr. Mairs joined the predecessor company in 1903, and was secretary and treasurer for many years.

The company's new president, Mr. Daniels, was first in the employ of the firm following his graduation from Yale University in 1914. In 1942 he served in Washington, D. C. as director of fats and oils with the War Production Board and later in charge of the fats and oils division of the War Food Administration of the U. S. Department of Agriculture. He rejoined ADM in 1943 and was elected an executive vice president in 1946.

His father, J. W. Daniels, was president and chairman of the board of the predecessor company from 1902 to 1923.

Mr. Daniels is nationally-known in the flax industry and serves as chairman of the flax development committee.

Mr. Sorenson, former president of the American Oil Chemists Society and present member of the Society's executive committee, joined Archer-Daniels-Midland Co. in 1923. He was named technical director of ADM in 1944.

In his new capacity as vice president in charge of research, Mr. Sorenson will supervise the activities of the ADM laboratory.

—s b d—

CANADIAN SOYBEAN ACREAGE IS DOWN

Early Canadian soybean estimates indicated an acreage greater than in 1946, reports *Foreign Crops and Markets.* Unfavorable weather conditions, however, during the growing season and at harvest time reduced the estimate to 49,000 acres compared with 59,000 in 1946.

The crop is expected to reach only 880,000 bushels, representing a drop of 18 percent from the previous harvest. Ontario is the only Province which produces soybeans on a commercial scale.

Since Canada needs more than is normally produced, it is probable that imports from the United States will continue to increase. January-June imports totaled over 880,000 bushels compared with 1.1 million for the 12 months of 1946.

The encouragement offered by the increase in price from $2.15 to $2.40 per bushel may account for the increased acreage actually planted (though not available for harvest). It is likely that the growing demand and the need for imports will tend to further encourage increased production in the future.

CANADA: SOYBEAN ACREAGE AND PRODUCTION, 1947 WITH COMPARISONS

ACREAGE

(1,000 acres)

	Soybeans
1945	46
1946	59
1947	49

PRODUCTION

(1,000 bushels)

1945	844
1946	1,072
1947	844

Compiled from official sources.

SOYBEANS IN COSTA RICA

By JORGE LEO'N

Soybeans were introduced into Costa Rica as early as 1904. However, the plantings amounted to little more than field trials and today the total acreage planted to soybeans is relatively insignificant.

There are a number of reasons why the introduction of soybeans into Costa Rica would greatly assist in solving problems:

1. They constitute an excellent source of vegetable protein which would greatly improve the diet of the Costa Rican, a diet which is strikingly deficient in protein.

2. The country is not self-sufficient in edible oils and relatively large quantities are consumed.

3. Livestock suffer from a lack of protein which could be readily supplied from soybeans grown as hay and pasturage or from soybean residues after edible oils have been extracted.

Field Trials

Field trials in Costa Rica have been conducted by certain people such as F. C. Wallace, formerly of Des Moines, Iowa, and now living in Santa Ana, Costa Rica; by the Inter-American Institute of Agricultural Sciences in Turrialba (see report "Edible Soybeans in the American Hemisphere" by A. Viehover, Coordinator Inter-American Affairs, June, 1944); and by the Goodyear Rubber Co. in its plantations on the Atlantic coastal zone in Costa Rica.

The food supply division of the Institute of Inter-American Affairs has introduced more than 70 edible varieties during the past 3 years in order to determine those best adapted to climatic and soil conditions. During 1945 and 1946 some 225 pounds of seed of a variety called "Wallace" (scientific name unknown) were distributed by the Institute in the major productive regions of Costa Rica. Small quantities were sent to Nicaragua for trials in that country. In cooperation with Mr. and Mrs. F. C. Wallace, some cooking demonstrations of soybeans were conducted in rural schools.

Varieties

Based on the experience during the past 3 years, the Institute has classified the 70 varieties according to yield, size, resistance to disease, and resistance to rainy weather. The following varieties have proved to be the best in the highlands (2500 to 3500 ft.): "Wallace," Hahto-Mich., Jogun, Kanro, Sato No. 6, Higan B, Creole, Hakote, Emperor and Lincoln. At lower elevations (100 to 500 ft.) the most promising varieties appear to be: Macoupin, Higan B, Patoka, Gibson, Chief, and Hakote. Two forage varieties, Otootan and Biloxi, gave promising results.

At the present time the widespread consumption by the Costa Rican population of edible soybeans does not appear likely. There is considerable resistance among the average Costa Rican to the taste of the soybean. Soybeans do, however, have a promising future as a source of vegetable oil, and the principal processor of vegetable oil in the country has taken personal interest in the development of soybeans for this purpose.

It appears that soybeans can compete favorably with other edible oil bearing crops such as peanuts and sunflower because of the larger yield per acre and the relative cheapness of the cost of cultivation. The first commercial plantings of oil bearing varieties will be made during the coming planting season.

Another possibility for the development of soybean culture, as yet not fully explored, is their development as stock feed, especially as a hay crop. Residue from preparing oil from soybeans would be readily saleable especially to dairymen.

USDA MEN WHO HAVE CONTRIBUTED TO SOYBEAN DEVELOPMENT

Leonard F. Williams

Dr. Leonard F. Williams, now associate agronomist at the U. S. Regional Soybean Laboratory, Urbana, Ill., has been with this 24-statewide organization of the U. S. Department of Agriculture for 11 years. The states cooperating with the U. S. Department of Agriculture on this research know him as the scientific contact man on genetics studies of this crop. He supervises breeding work and distributes promising material to the cooperators.

The breeding program he developed in the North Central States has resulted in several new varieties of soybeans superior in yield, in oil content, and in quality of oil or "iodine number" to the varieties that had been commonly grown.

Outstanding varieties bred by Dr. Williams, in cooperation with Dr. C. W. Woodworth of the Illinois Agricultural Experiment Station, are Chief and Lincoln. The Lincoln, named only 4 years ago, stands head and shoulders above the other varieties in the North Central States, with possible exception of the new Hawkeye. It not only outyielded the former best varieties of the region by 5 or 6 bushels to the acre, but was ahead of them in percentage and quality of oil.

Of the crosses made in recent years by Dr. Williams thousands of selections are now under test throughout the 24 states cooperating with the Urbana Laboratory. Many of these strains are promising as industrial types for various sections.

Men like Williams and other research men will keep on producing still newer strains better adapted to various localities and yielding more and better oil for, perhaps, more and more purposes.

1947 SOYBEAN CROP 177 MILLION BUSHELS

Production of soybeans is indicated at 177,379,000 bushels as of November 1, according to the U. S. Department of Agriculture's November 1 crop report. This is a reduction of 3.6 million bushels from the October 1 forecast and is about 10 percent below the record 197 million bushel crop produced in 1946.

Yields turned out about as reported except in Iowa and Kansas. In Iowa yields were disappointing. Although the beans are of good quality they are small in size. The late plantings and severe drought have resulted in an estimated yield of only 14.5 bushels per acre down 1½ bushels from the yield indicated in October. Last year Iowa had a record yield of 23 bushels per acre. In the South Atlantic and South Central States reported yields have changed little from October except in Arkansas, where the yield of 12.5 bushels is 2 bushels lower than forecast.

The U. S. indicated yield of 16.6 bushels per acre is the lowest in 10 years with the exception of the 16.2 reported in 1940 and is far below the high yield of 20.5 bushels per acre produced in 1946. The 10-year average yield is 18.2 bushels per acre.

SOYBEANS FOR BEANS

State	Yield per A. Bushels		Production 1,000 Bushels	
	1946	Pre. 1947	1946	Pre. 1947
Ohio	18.0	18.0	16,254	15,426
Ind.	19.0	19.0	25,346	27,455
Ill.	23.5	19.0	75,036	64,087
Mich.	15.0	18.0	1,290	1,404
Wis.	12.5	14.0	412	448
Minn.	17.5	15.0	10,675	13,950
Iowa	23.0	14.5	34,960	26,202
Mo.	20.0	13.0	14,360	10,569
Kans.	11.0	8.5	2,178	1,760
Va.	16.5	15.0	1,106	1,530
N. C.	13.5	14.5	2,862	3,335
Ky.	18.0	16.5	1,566	1,320
Tenn.	18.0	15.5	810	775
Miss.	15.0	14.0	1,050	1,610
Ark.	18.5	12.5	5,458	3,750
Other states	14.3	13.5	3,362	3,758
U. S.	20.5	16.6	196,725	177,379

Publications

Feeding

LARGE AMOUNTS OF SOYBEAN OIL MEAL IN PIG RATIONS. By J. L. Fletcher. *Mississippi Farm Research*, October 1947. State College, Miss.

A feeding trial was conducted last summer to investigate the possibility of using soybean oil meal in amounts large enough to supply the protein and replace a part of the grain in the ration of fattening pigs.

Two lots of eight pigs were used in this experiment which was started on July 9. Lot 1, the check lot, received a standard ration consisting of a mixture of 90 pounds of ground yellow corn, 5 pounds of tankage, and 5 pounds of cottonseed meal. Lot 2 was fed a ration composed of 70 pounds of ground yellow corn, and 30 pounds of soybean meal. Both lots of pigs were self-fed while grazing on sudan grass.

Results indicate a palatable ration was provided when a high percentage of the feed mixture was soybean oil meal. The pigs in lot 2, receiving soybean oil meal, ate .9 pounds more feed per day than the check lot pigs. The daily gains for the soybean oil meal pigs were correspondingly greater than those of the check lot. The daily gain of 1.94 pounds made by the soybean oil meal pigs was considered very satisfactory.

The feed required to produce 100 pounds of gain in the two lots was significantly different. The pigs in lot 2, receiving soybean oil meal, required 51.9 pounds less feed to produce 100 pounds of gain than was required by the check lot pigs. Thus, the cost of a pound of gain was less for lot 2, even though a greater amount of higher priced feed was used in the feed mixture.

Prices on hogs were rising throughout the feeding period, resulting in a very favorable margin between feeder pig prices and market hog prices. In addition, the prices of the feeds used in this feeding were considerably below the price levels of July and August. This was the result of fortunate purchases of feeds somewhat earlier in the year.

Although this situation resulted in unusually good profits per pig, $20.49 per pig in lot 1, and $26.58 per pig in lot 2, it is believed that the difference between the profits per pig in the two lots was typical of what might be secured under more normal price relationships. The greater profit per pig in lot 2, the soybean oil meal lot, was due to the more rapid gain and resulting heavier weight of these pigs at market time. The soybean oil meal pigs were in slightly higher condition as well as being heavier weight.

NUTRITIONAL SIGNIFICANCE OF SOYBEAN LECITHIN FOR ANIMAL FEEDING. By Albert Scharf, Ph.D., American Lecithin Co., Long Island City 1, N. Y. *Feedstuffs*, Sept. 27, 1947.

Commercial soybean lecithin is a desirable ingredient for feeds, especially for fur-bearing animals.

Commercial soybean lecithin contains a number of substances which are of specific nutritional value. The effect of these combined factors is superior to that of any single factor.

Lecithin is capable of preventing deterioration of fats and fat-soluble vitamins, especially vitamin A; and improves fat and vitamin A utilization during digestion.

THE INFLUENCE OF AUTOCLAVING SOYBEAN OIL MEAL ON THE DIGESTIBILITY OF THE PROTEINS. By Robert John Evans, James McGinnis and J. L. St. John, Division of Chemistry and Poultry Husbandry, Washington Agricultural Experiment Station, Pullman, Wash. *Journal of Nutrition*, June 10, 1947.

A study of the digestibility of soybean oil meal proteins as influenced by autoclaving. The experiment was a continuation of work reported earlier by Evans and McGinnis.

THE USE OF SOYBEANS IN FATTENING RATIONS FOR BROILERS AND FRYERS. Rollin H. Thayer, Oklahoma Agricultural Experiment Station. *Oklahoma Academy of Science Proceedings*, 1946.

The author made two feeding tests in which a broiler mash containing a soybean meal made from whole cooked soybeans was compared to a standard broiler mash containing commercial oil meal. He concludes that soybean meal prepared from whole cooked soybeans may replace soybean and cottonseed oil meals in broiler mashes fed during the growing period just prior to the premarket fattening period.

Diseases

DISEASE SURVEY OF SOYBEAN NURSERIES IN THE SOUTH. By J. L. Weimer. *Plant Disease Reporter*, June 1, 1947. Plant Industry Station, Beltsville, Md.

Report on a disease survey of soybean nurseries located in Alabama, Georgia, Louisiana, Mississippi and South Carolina. The survey was made each year from 1944 to 1946 inclusive.

Chief purpose of the survey was to obtain information on the diseases present and their severity, and to learn whether any of the varieties were resistant.

Readings were taken on pustule-blight, wildfire, frogeye, and mosaic.

Data indicate the following varieties possess the greatest relative resistance to the bacterial pustule-blight complex: Ogden, C-N-S, Palmetto, Cherokee, and probably Louisiana Green and Dortchsoy No. 2. Only one season's data are available on the last two varieties. The resistance is only relative, since it breaks down more or less under certain conditions. Nevertheless, it is sufficiently stable to justify the use of such varieties, at least of Ogden and C-N-S, as breeding stock.

Resistance to wildfire, if there is any, will most probably be found in Ogden, C-N-S, Palmetto, Cherokee, and possibly Louisiana Green and Dortchsoy No. 2.

Some varieties were found to be out-

standingly susceptible to frogeye, but the disease was seldom sufficiently severe to make possible a positive determination of the most resistant ones. The 1946 readings at Baton Rouge, where frogeye was rather severe on many varieties, indicated that the following probably are the most resistant varieties in Group VII: Roanoke, Volstate, F. C. 30261-1, and Wood's Yellow. On the other hand, the varieties Ogden, Rose Non-pop, and Burdette No. 20, in Group VI, and Acadian, Gatan, and Cherokee in Group VIII were highly susceptible to frogeye, and all the others were more or less resistant. In general, the hay types are more susceptible than the others.

There was so little downy mildew present on most varieties that no conclusions regarding their resistance can be drawn. Wood's Yellow, 26-39M, C-N-S, Delsta, Mamloxi, Nanda, and Mamotan were the most susceptible.

Mosaic was often present, but usually only in trace amounts. No final conclusions as to the most resistant varieties can be drawn from the data at hand, but the most seriously affected varieties observed in 1946 are: Rose-Non-pop, Burdette No. 13, Arksoy, Wood's Yellow, Palmetto, Roanoke, Volstate, Mamotan, Gatan, Seminole, C-N-S, Acadian, N44-774, N44-92, Red Tanner, Cherokee, Mamloxi, and Louisiana Green. If any variety were to be rated as resistant on the basis of the data obtained, it would be Ogden and possibly Dortchsoy No. 2.

Pod and stem blight, charcoal rot, sclerotial blight, anthracnose, leaf spot (*Alternaria*, or possibly arsenic), *Phyllosticta* leaf spot, bud blight, and an unknown virus disease were observed in the nurseries and in other plots and fields in the region.

Production

SOYBEANS, PRODUCTION, FARM DISPOSITION, AND VALUE, BY STATES, 1924-44. 16 pages. Crop Reporting Board, Bureau of Agricultural Economics, Washington, D. C.

Thirty soybean-producing states are included in the tables in this report.

Estimates of farm disposition of soybeans form one of a series of reports on farm disposition of the principal agricultural crops. The estimates go back to 1924, the first year for which official production estimates are available.

Soybean production has expanded tremendously in the 21 years covered by this publication—from less than 5 million bushels in 1924 to over 190 million bushels in 1944.

Farm disposition of the crop likewise has undergone many changes. In 1924 about 15 percent of the crop was used for seed on farms where produced, 25 percent was fed to livestock and the remaining 60 percent was sold. By 1941 the quantity of seed used on farms where produced accounted for 6 percent, only 2 percent was fed and sales amounted to 92 percent of production.

Fats and Oils

INTERNATIONAL EMERGENCY FOOD COUNCIL REPORT ON FATS AND OILS. Current Situation and Future Outlook in World Supplies and Distribution of Oilseeds, Fats and Oils. Washington, D. C.

World supplies of fats and oils might just conceivably cover effective demand by 1950, according to the IEFC committee on fats, oils and feeds. But this conclusion can only be reached through generous production estimates for most countries.

The committee's estimates are largely statistical and do not assume any particular price level or price relationship for fats or other products. Much depends on the extent to which importing countries will devote their limited foreign exchange resources to the purchase of any one class of foods, such as fats and oils.

But whether prices rise further, remain stable or go down in the next few years, there can be little doubt that world supplies will be well short of "unrestricted" demand.

This forecast, the committee says, would need to be modified if a major economic recession occurred; but it should be remembered that even during the depressions of 1929-1939, the consumption of both edible and industrial fats steadily increased. There is every reason to believe that this long term trend will continue and possibly accelerate as healthier economic conditions are established.

It is clear that all countries must redouble their efforts to restore or further increase production of fats and oils.

GRITS and FLAKES... FROM THE WORLD OF SOY

F. H. Ludington, president of the 100-year-old Chase Bag Co., was guest of honor and principal speaker at the annual "St. Louis" week dinner. The dinner was sponsored by the Century of Commerce Club of the St. Louis Chamber of Commerce, and honored 517 firms in business 50 years or longer.

* * * *

American Paint Journal in its issue of Oct. 6 reprinted a paper entitled, "History and Prospects of Domestic Soya Bean Oil," by Otto Eisenschiml, president of the Scientific Oil Compounding Co., Chicago. It was originally given before the Northwestern Paint and Varnish Production Club, March 11, 1929.

* * * *

Ray Ilstrup has been appointed sales research manager for the feed and soy division of Pillsbury Mills, Inc., Clinton, Iowa. He will continue to be responsible for the sale of soybean oil and oil products. He has been assistant to H. J. Schultz, vice president in charge of soy operations, since 1944.

* * * *

A contract with Commodity Credit Corporation for delivery of 8,600,000 pounds of edible soy flour has been signed by Soya Corp. of America, New York.

* * * *

A new dump truck and a 50 ft. 50 ton scale were installed at the Swift & Co, Fostoria, Ohio, soybean mill to facilitate unloading of soybeans this fall.

* * * *

Blaw-Knox Co., Pittsburgh, has issued Bulletin 2204, 24 pages illustrated and entitled, *Complete Plants and Equipment for the Process Industries.* Applications covered include resin and varnish production, fat splitting, oil and fat hydrogenation, high pressure processing and solvent recovery.

* * * *

The annual meeting of the International Institute of Milling Technology will be held in the Bungalow atop the Morrison Hotel, Chicago, May 18, 1948, announces Dean M. Clark, secretary.

* * * *

M. Vincent Fisher has been appointed sales representative for northern Indiana, northern Ohio and Michigan, by Sprout, Waldron & Co.

* * * *

Marion O. Moulton has been named assistant manager under E. E. Gratch of the St. Louis office of Union Special Machine Co. He joined Union Special in 1933 in the Atlanta Office.

* * * *

An oil portrait of Adrian D. Joyce, founder and board chairman of the Glidden Co., was presented to the firm by 163 of Mr. Joyce's associates in ceremonies at Glidden's Cleveland headquarters Oct. 31. The portrait is by Ralph Stoll.

* * * *

Hamilton W. Putnam is the new head of the food research division in the laboratories of Central Soya Co., Inc., Ft. Wayne, Ind. He comes from General Foods Corp., Evansville, Ind., and succeeds Homer Kuehn. Mr. Kuehn has been promoted to the Ft. Wayne offices of Central Soya.

* * * *

The Western New York Paint and Varnish Production Club, Buffalo, N. Y., heard W. G.

GLIDDEN PROMOTION

Curtiss C. Mitchell, who was recently promoted to sales manager of the Norwalk, Ohio, division of Durkee Famous Foods. He has had long experience in the food business, joined Durkee Famous Foods in 1937.

—s b d—

TO CENTRAL SOYA

To improve its service to customers in the candy field, Central Soya Co., Inc. has appointed Harold G. Butler to act as special representative and technical adviser on the use of soy albumen and other products, according to a recent announcement by J. R. Turner, manager of the company's products division, Ft. Wayne, Ind.

Mr. Butler has been associated with the candy industry for over 30 years as production man and technical adviser. For the past 12 years, he has been with the Borden Co. as consultant on the use of soy products. He has written a number of articles on the use of soy protein as a whipping agent.

Andrews, Archer-Daniels-Midland Co., describe "Soybean Oil as Utilized in Interior and Exterior Paint and Industrial Finishes" at its October meeting.

* * * *

A new 144-page indexed catalog for pre-engineered stock Textrope drives has been announced by Allis-Chalmers Mfg. Co., Milwaukee, Wis.

* * * *

The Eastern Iowa Milling Co., New Hampton, Iowa, owned by G. A. Ward and W. V. Clark, completed outside work on their new $100,000 soybean processing plant and began operations Dec. 1.

* * * *

J. S. Owens, professor of agronomy, Connecticut State College, Storrs, is on leave of absence, serving as agronomist on the agricultural advisory committee of General Douglas McArthur's staff in Japan. He will continue for another year.

* * * *

"Determination of Nitrogen in Vegetable Oils," was the title of an article by T. A. McGuire, F. R. Earle and H. J. Dutton of the Northern Regional Research Laboratory, in the November issue of the *Journal of the American Oil Chemists' Society.*

* * * *

K. S. Markley, head of the oil, fat and protein division of the Southern Regional Research Laboratory, New Orleans, and past president of the American Oil Chemists' Society, in 1944, was honored in the November issue of the *Journal* of that society.

* * * *

D. E. Daniel recently was named office manager of the Blytheville, Ark., mill of Swift & Co. He joined Swift at Macon, Ga., in 1940.

* * * *

Soybean production maps for Arkansas, Missouri, Iowa, Illinois, Minnesota and Kansas have been issued by the office of the industrial commissioner of the Rock Island Lines, Chicago. Included is production by counties for 1940, 1945, 1946 and 1947. Processing plants are indicated.

* * * *

Don L. Baughman has been promoted to manager of the commodity purchasing department of McMillen Feed Mills, division of Central Soya Co., Inc. He was elevated from the post of chief soybean buyer at the company's Gibson City, Ill., plant.

HEADS DIXIE CO.

Elmer W. Noxon, formerly vice president of the Dixie Machinery Manufacturing Co., St. Louis, assumed the presidency of that company following his purchase of all of the outstanding stock of the organization, effective September 22.

With a background of 18 years association with Dixie, Mr. Noxon also served in the capacity of manager and chief engineer of the Ralston-Purina Co.

H. H. Storck, for 21 years with Dixie, was reelected to the position of secretary. J. L. Leykam, with the company for 6 years, was elected treasurer.

The Dixie concern manufactures crushing, grinding and pulverizing equipment for the rock and feed industries.

—s b d—

BLAW-KNOX PLANT

Blaw-Knox Co., Pittsburgh, Pa., has developed a 15-gallon electro-vapor pilot plant for use by manufacturers of resins, plastics, paints, varnishes and allied products, as well as by general chemical producers.

The pilot plant is regarded as appropriate for production development as well as for laboratory investigation. A number of the units are already in service both in the U. S. and abroad.

SOY ON POLAR TRIP

For the first time in polar expedition history, a straight commercial dog food, without benefit of seal oil or blubber, is being fed the sled dogs on the Ronne Antarctic Research Expedition, now located near the South Pole.

This information was received by E. H. Kieser, vice president in charge of sales of Kasco Mills, Toledo, Ohio, in a radio dispatch from Commander Finn Ronne, leader of the expedition.

Ronne's report stated "Kasco Food has been used at base without seal oil or blubber and is proving nourishing." One of the principal ingredients of the dog food is pea size soybean oil meal. Concerning its use, Kieser said: "We consider it one of the finest sources of amino acids, since it approximates very closely the amino acid content of meat, eggs and milk. Dogs find it very palatable. Palatability is a very important factor in a manufactured, dry dog food."

Previously, it was thought that it was necessary to add seal oil and blubber to keep the dogs alive.

The expedition left the United States by boat last spring from Beaumont, Tex.

—sbd—

BURROWS CATALOG

The first catalog issued by the Burrows Equipment Co. has just been released for general distribution. The colorful front cover of the catalog bears an announcement outlining the policies and facilities of the new organization, and pictured and described on the following pages is a comprehensive selection of quality grain and seed-testing equipment and supplies approved and guaranteed by Burrows.

In addition to such standard items as moisture testers, probes, dockage sieves, treaters, blowers, bag trucks, the Burrows Equipment Co. catalog lists numerous others including new items such as bagging scales, aluminum baskets, truck hoists, intercommunication equipment and industrial cleaners and blowers.

A copy of the catalog may be obtained by addressing the Burrows Equipment Company, 1316 Sherman Avenue, Evanston, Ill.

WASHINGTON Digest

Soybean Goals Officials here are bullish about soybean prices, and are shooting for a 204-million-bushel crop.

The 1948 production goal of 10.8 million acres is 102,000 acres above the 1947 harvested acreage. If realized it will be the largest soybean acreage in history. Acre yields equal to the last 5-year average are assumed.

It's wartime farm production, modified by Marshall Plan needs, that the Department of Agriculture has requested in 1948 goals.

They represent close to all-out production, without much allowance for "adequate" soil conservation.

The program reflects widespread official optimism about exports and prices for several years to come.

Officials are confident that Congress will vote substantial funds for European aid. Congress itself is talking of a Marshall Plan for the Far East. Another one for India is possible.

It all adds up to the virtual certainty that the U. S. will be in the business of helping in a big way to feed the world for years. Congress seems sold on the idea that U. S. foreign policy and national security are at stake.

Top Administration officials have confided that the world can't catch up on cereal production in less than 10 years. World supplies of fats and oils are expected to get somewhere near in line with effective demand much sooner, but not for another year at least.

On the price side, there's not quite so much fear here of bad inflation as a few months ago. Come a big corn crop in 1948, most of the danger would be over, several top economists think. Size of corn crop is counted much more important, price-wise, than size of the wheat crop.

Price Future Nevertheless, both political parties have the price jitters, especially the GOP. Leaders are talking big but are searching around for some kind of an answer to President Truman.

They haven't found a good one yet. It's virtually certain the GOP won't go for full price control. Export controls, consumer credit controls, domestic allocations and further commodity exchange regulation — these aren't reckoned as enough.

Allocation authority asked from Congress seems likely to be granted only in part. Among the probabilities is set asides of protein meals.

One price control plan under discussion is putting a limit on volume of exports. Grain prices, for instance, could be checked in this way. Political drawback to that is the flareback that might come from cutting foreign aid. The GOP is more than apt to give up the idea.

Another one considered as a last resort if meat prices get soaring in the spring is to give Truman blanket authority to invoke either or both rationing and price control on livestock and a few other scarce items. GOP thinking is that this would leave the decision and the rumpus—if any—on the White House steps.

Secretary Anderson's proposal to underwrite foreign farm production by extending price support guarantees to farmers in other producing countries is not likely to please Congress. It could be carried out, however, under the Commodity Credit Corporation Charter without Congressional approval.

The plan was worked out by Anderson and Commerce Secretary Harriman. It has Truman's blessing. GOP leaders so far are cold to it, and Anderson isn't apt to go ahead.

On the other hand, there seems little doubt that Congress will approve funds for European countries to buy needed foods outside the U. S. It also will okay funds for buying non-cereal U. S. surplus foods in place of wheat — and re-selling at a loss.

Until the Marshall Plan gets going, the cash-paying European countries are caught in a squeeze. U. S. food is going into France, Italy, Greece, Austria, Poland and Germany. Those who have managed to keep a few dollars ahead are getting desperate. These include Denmark, Holland, Belgium, Portugal, Sweden, and Norway.

By PORTER M. HEDGE
Washington Correspondent for The Soybean Digest

Foreign Oil Crops A mission of experts is soon to go to Venezuela to help farmers there get going in oil crop production. The mission is in charge of Food and Agriculture Organization.

Canada is turning more toward oil crops. New varieties are under test, and seed certification and distribution are being improved. Price guarantees, marketing concessions and freight rate adjustments are being made as encouragements.

Soybeans are being promoted in the rotation system in Ontario, in addition to flax and sunflowers in the Prairie Provinces, and rape seed in many places.

The Department of Agriculture says the campaign to encourage farmers to hold soybeans off the market this fall has gotten results. Reports from processors and others indicate much larger quantities are being held this year than last.

USDA finally granted Army an allocation for export of 1 million bushels of whole soybeans to Japan for processing into food.

SOY OIL REVERSION COMPOUND ISOLATED

A number of developments in research in the flavor reversion of soybean oil were described at the 21st fall meeting of the American Oil Chemists' Society at Chicago October 20 to 22.

Isolation and identification of a reversion compound from reverted soybean oil—believed an important step toward eventual elimination of the flavor deterioration—was recently accomplished at the University of Pittsburgh and was the subject of a paper presented at the oil chemists' meeting.

B. F. Daubert, A. I. Schepartz, and C. J. Martin, all with the department of chemistry, University of Pittsburgh, contributed to the isolation of the reversion compound.

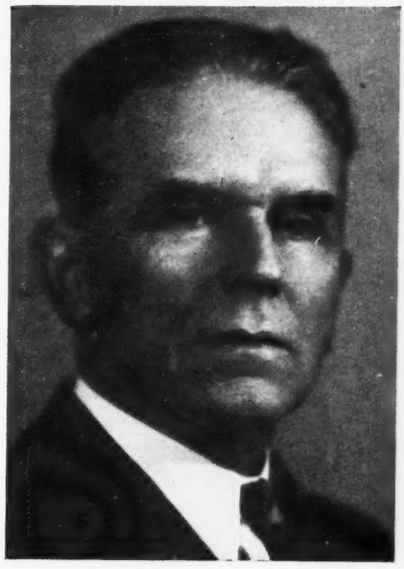
This compound, Dr. Daubert reported to the oil chemists' meeting, is apparently alpha heptenal. Research at the university is now being applied to the problem of discovering what property of the original soybean oil causes the production of this compound, Dr. Daubert said.

The German scientists' belief that the use of citric acid in deodorization increases the stability of soybean oil flavor has proven to be correct, said Dr. J. C. Cowan, Northern Regional Research Laboratories. He explained that citric acid acts as a scavenger to remove minute quantities of metal from their role as a pro-oxidant.

There was a record attendance of 627 at the meeting.

Dates for the 1948 meetings of the society will be May 2-6, New Orleans; and November 15-17, New York City.

Receive USDA Superior Service Award



DAVID BREESE JONES

W. J. MORSE

Two men well known to the soybean industry were presented with the U. S. Department of Agriculture's superior service award by Agriculture Secretary Clinton P. Anderson at ceremonies November 12. They are W. J. Morse, principal agronomist of the Bureau of Plant Industry, Beltsville, Md., and David Breese Jones, head of the protein investigations laboratory of the Federal Bureau of Human Nutrition and Home Economics.

Morse was one of the founders of the American Soybean Association, in which he has been active since its organization. The award was presented "for his contribution to American agriculture by research on soybeans which has resulted in their development as a major agriculture crop."

Jones' research work with vegetable proteins including soybeans has long been recognized by the industry. He received the award "for his contribution to science through research into the chemical nature, digestibility, and biological value of proteins and their constituent amino acids."

Morse and Jones are among the first Department of Agriculture men to be so honored. The awards will be made annually.

Market Street

We invite the readers of THE SOYBEAN DIGEST to use "MARKET STREET" for their classified advertising. If you have processing machinery, laboratory equipment, soybean seed, or other items of interest to the industry, advertise them here.

Rate: 5c per word per issue.
Minimum insertion $1.00.

SITUATIONS VACANT — Two fully qualified and experienced chemical engineers required, each to run one shift of a 150 tons a day Allis-Chalmers solvent extraction plant on soya beans in England, commencing first September 1948. Previous experience in solvent plant essential. Excellent salary. Write full details, to FS, care Soybean Digest, Hudson, Iowa.

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80— 4,200 Gal. Cap. 9'2" x 8' Vertical
16—19,000 Gal. Horizontal 10'6" x 30'
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15—42,000 Gal. Cap. 21'6" x 16' Vertical
30—42,000 Gal. Cap. 29'8" x 8' Vertical
10—126,000 Gal. Cap. 29'8" x 24' Vertical
L. M. STANHOPE ROSEMONT, PENNA.

SOYBEAN VARIETY COMMITTEE MEETS

The special committees appointed to develop lists of variety names and descriptions of seeds to be used as guides in the administration of the Federal Seed Act have met to consider problems and a course of action, reports Production and Marketing Administration.

The soybean committee met at Urbana, Ill., September 19.

The sorghum and soybean committees found it possible to take definite steps looking toward the early publication of a list of recognized variety names and descriptions.

The purpose of the committees, appointed in 1946 by the director of the grain branch, Production and Marketing Administration, in cooperation with the Bureau of Plant Industry, Soils, and Agricultural Engineering, Agricultural Research Administration, is to provide a common source of information with respect to the variety names that would be recognized in the administration of the Federal Seed Act. Persons who ship seed in interstate commerce may look to these lists for guidance. Considerable confusion exists in the names of varieties of many of the agricultural and vegetable crops. This confusion makes it difficult for buyers of seed to select the variety best adapted to their needs. The formation of these committees was regarded as experimental. Their progress to date is encouraging and it is believed that the appointment of other committees would bring about an improved situation with respect to many kinds of crops not now included in the studies.

W. A. Davidson, Beltsville, Md., representing the grain branch, Production and Marketing Administration, acts as chairman of the committees. Other members of the soybean committee are as follows:

W. J. Morse, Beltsville, Md., representing the Bureau of Plant Industry, Soils, and Agricultural Engineering, Agricultural Research Administration.

J. C. Hackleman, Urbana, Ill., representing state experiment stations.

Harold Abbott, Bloomington, Ill., representing the American Seed Trade Association.

Stanley Folsom, Minneapolis, Minn., representing the American Seed Trade Association.

—s b d—

SCALE BULLETIN

The full line of Shadograph scales for industrial weighing manufactured by the Exact Weight Scale Co., Columbus, Ohio, is described in a new bulletin which the firm has published. Illustrations and specifications concerning the various models of scales are included in the new bulletin, number 3201. Copies may be obtained by writing Exact Weight Scale Co., Columbus 8, Ohio.

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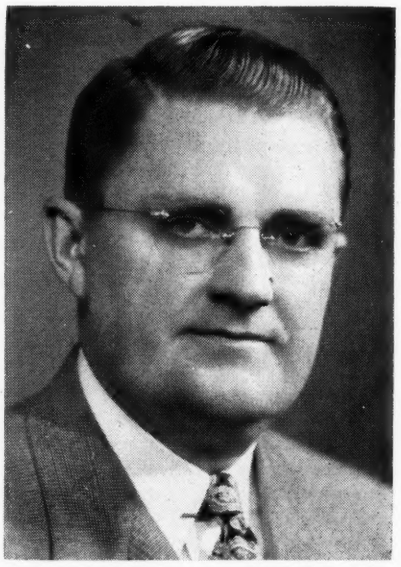
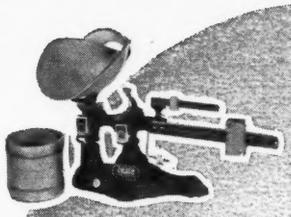
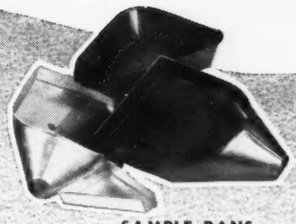


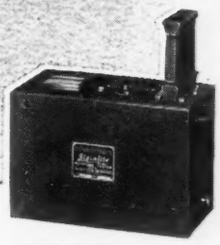
Appointment of Scott E. Cramer as head of the oil mill department of Swift & Co. has been announced. Cramer has been associated with the oil mill department of the company since 1945. In his new position he will have jurisdiction over soybean, cottonseed, and peanut oil processing mills. Cramer joined Swift & Co. at South Omaha in 1931.



SCALES
Seedburo carries a complete line of scales for the seed and grain trade. All are built for endurance as well as accuracy. Write for complete details.



SAMPLE PANS
Used to handle and file samples in the laboratory for grading and testing grain and seed. Available in various sizes.



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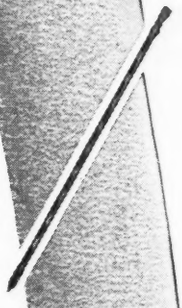

GRAIN PROBES
No. 22-S—Standard probe for sampling grain in railroad cars. 63" Government Special Probe, double tube brass, wooden handle, 1⅛" outside diameter, 11 openings.

. . . in designing, building and improving grain and seed testing equipment. This achievement by Seedburo results from the management's strict adherence to the policies established by the founder, the late Mr. L. M. Smith. These policies are (1) To specialize in seed and grain testing and handling equipment . . . and allied products, (2) To keep abreast of scientific research related to grain and seed, (3) To be alert to developments in agricultural equipment, (4) To sell nothing but the highest quality products, (5) To satisfy every customer on every purchase.

Today, Seedburo is not only the oldest firm in its field . . . but also the largest.

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May be used for both light and dark germination tests. Insulated sidewalls protect against rapid temperature changes.

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In The MARKETS

NOVEMBER MARKETS IN UPWARD SURGE

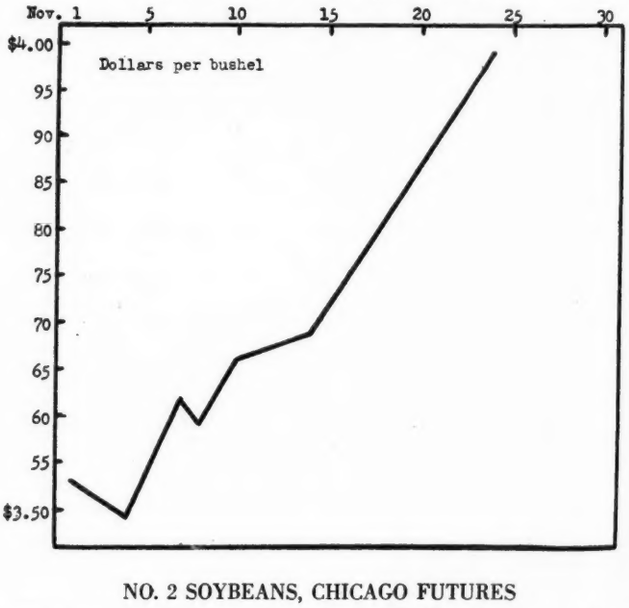
Prices for soybeans and soybean products moved to sharply higher levels during the month. They made a nearly steady advance for the whole month.

Soybean oil meal reached the highest point since early October. Soybean futures found the highest ground since the opening of the futures market in Chicago in July. Spot soybeans brought the highest prices since March, and crude soybean oil the highest since April.

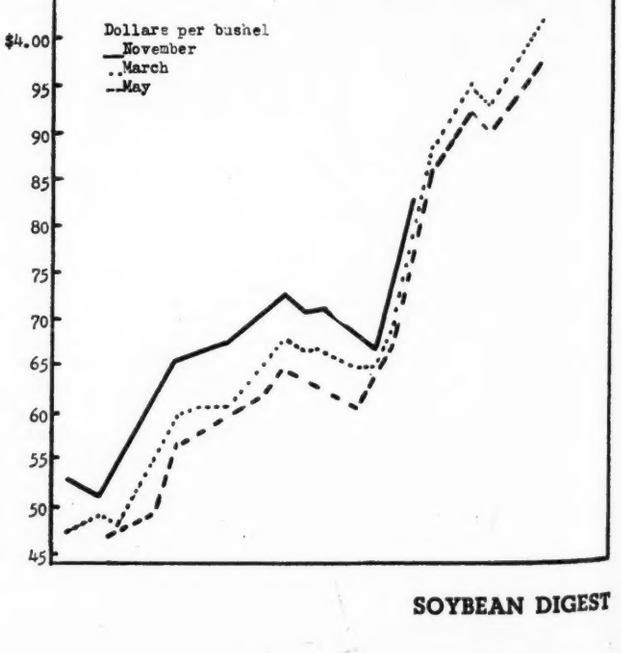
Heavy demands developed for soybeans for all purposes. The government's Nov. 1 report of a light soybean crop was a factor in the upward movement, though this was anticipated.

Cash No. 2 soybeans were quoted at $3.49½ on the Chicago market Nov. 4, the low point for the month. They reached a high of $3.99 Nov. 26. March futures were quoted at $3.47 Nov. 1; and

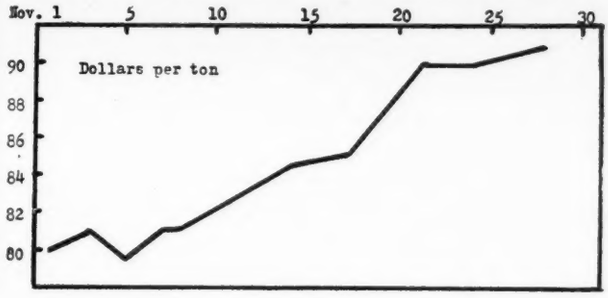
CASH NO. 2 SOYBEANS, CHICAGO



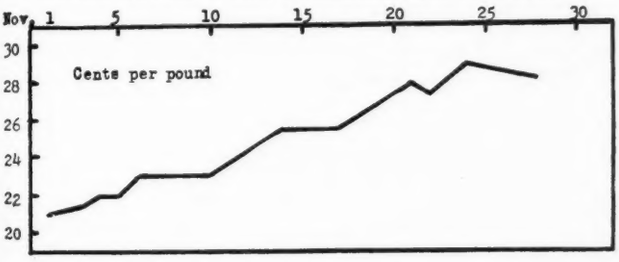
NO. 2 SOYBEANS, CHICAGO FUTURES



SPOT BULK SOYBEAN OIL MEAL, DECATUR BASIS



CRUDE SOYBEAN OIL, TANKERS, F.O.B. DECATUR



reached $4.01 Nov. 29. The market ran into some setbacks the last week of the month but had recovered by the end of the week. July futures were quoted at $3.90 Nov. 29.

The upward market movement was reported not to have brought out materially greater supplies of soybean oil meal. Supplies remained tight and trading rather dull, though it was stimulated somewhat by snow and cold weather.

Factors in the stronger meal market were the tight meal situation, the higher soybean market, together with reports of the government's plans to buy further large amounts of soy flour and possibly edible soybean oil meal for February through June shipment abroad.

Bulk soybean oil meal, basis Decatur, was quoted at $79.50 Nov. 5, the month's low. It reached a high of $90.50 Nov. 29.

Crude soybean oil gained 8c during the month. Nov. 1 quotation, tankers, FOB Decatur, was 21c; by Nov. 24 it had reached 29c.

SOYBEAN SUPPLIES FOR 1947-48 SMALLEST IN SIX YEARS

Supplies of soybeans for 1947-48 from present indications will be the smallest in the past 6 years as a result of an estimated 10 percent drop in the 1947 crop and smaller than average carry-over stocks. Crushing of soybeans during the 1946-47 season was the largest on record, reflecting the large supplies of soybeans and the urgent demand for oil, reports Production and Marketing Administration.

Carry-over stocks of soybeans on October 1 were the second smallest in 6 years of record and amounted to only 5.3 million bushels. A year ago stocks totaled 4.3 million bushels while the 5-year (1942-46) average is 9 million bushels. Based on current estimates of production and the carry-over, supplies of soybeans for 1947-48 amount to 183 million bushels compared with 201 million for 1946-47 and the same for the 5-year average.

Disappearance of soybeans last season was only slightly larger than the previous season despite a sharp increase in crushings. The quantity of beans used for feed totaled under 5 million bushels during 1946-47 or less than a third of the quantity in 1945-46. Crushings of soybeans for oil were at record levels and amounted to over 170 million bushels, according to reports of the Bureau of the Census. This is almost 11 million bushels more than the previous record in 1945-46 and 17 million bushels above 1944-45.

The use of soybeans for flour and grits was also a record high

amounting to 9.6 million bushels with 9.2 million used for low fat or defatted products and 440,000 bushels for full fat products. This compares with 9.3 million used for flour and grits in 1945-46 and 2.8 million in 1944-45.

Exports of soybeans were heavy the first quarter of the season amounting to 3.1 million bushels for the entire season. Exports in 1945-46 totaled 2.8 million bushels while in 1944-45 exports were 5.1 million bushels. About 17.4 million bushels were used for seed for the 1947 crop.

• COMMERCIAL SOYBEAN STOCKS. Production and Marketing Administration's commercial grain stock reports for November.

U. S. SOYBEANS IN STORE AND AFLOAT AT DOMESTIC MARKETS (1,000 bu.)

	Nov. 3	Nov. 10	Nov. 17	Nov. 25
Atlantic Coast	197	361	402	152
Gulf Coast	41	56	63	63
Northwestern and Upper Lake	1,339	1,791	2,010	2,192
Lower Lake	2,134	3,955	4,394	4,901
East Central	2,577	3,179	3,380	3,470
West Central Southwestern & Western	2,360	2,732	2,862	2,889
Pacific Coast	0	0	0	
Total current week	8,648	12,074	13,111	13,667
Total year ago	15,285	18,782	21,841	21,850

• SOYBEAN OIL OUTPUT. October production of crude soybean oil showed an increase while the refined oil decreased slightly from September, according to preliminary figures released by the Bureau of the Census, Department of Commerce. Production of crude soybean oil was reported at 107 million pounds, 17% more than the output in September and 8% more than October of last year. Factory and warehouse stocks, amounting to 80 million pounds, remained at approximately the same level as in September but were 29% less than the stocks reported in October 1946. The tremendous increase of October over September stocks of soybeans at oil mills reflects their movement to the crushing mills and the beginning of the crushing season.

Production of refined soybean oil totaled 88 million pounds, 1% less than the reported output for September and 2% more than October 1946. Stocks at the end of the month decreased to 77 million pounds, 38% below stocks at the end of September and 36% above October of last year.

SOYBEANS AND SOYBEAN OIL, OCTOBER 1947

Item	Unit	Oct. 1947	Sept. 1947	Oct. 1946
Soybeans				
Crushed	Short tons	339,178	*291,996	*328,489
Stocks at oil mills (end of month)	" "	1,014,062	*83,243	*1,213,425
Crude soybean oil				
Production	1,000 lbs.	107,014	*91,358	*98.943
Stocks (end of month)	" "	79,641	*79,583	*111,460
Refined soybean oil				
Production	" "	88,413	89,400	86,669
Stocks (end of month)	" "	77,103	*124,043	*56,807

*Revised

• STANDARD SHORTENING SHIPMENTS. Reported by members of Institute of Shortening Mfgrs., in pounds.

November 1	8,535,244
November 8	6,904,794
November 15	9,238,212
November 22	10,269,585

• QUALITY OF 1947 CROP GOOD. The quality of the new 1947 soybean crop, as indicated by the October inspections, is considerably higher than that of last season, 92 percent grading No. 2 or better compared with 77 percent the same month a year ago and 81 percent the 5-year (1941-45) October average.

Receipts of soybeans inspected during October, the first month of the 1947-48 season, totaled 30,830 cars compared with 32,278 cars for October 1946.